JAN 14 1928
TRANSPORTATION LIBRARY
UNIVERSITY OF MICHIGAN

Railway Age

WITH WHICH IS INCORPORATED THE RAILWAY REVIEW

FIRST HALF OF 1928—No. 2 NEW YORK—JANUARY 14, 1928—CHICAGO SEVENTY-SECOND YEAR

Another year added to the

PERFORMANCE RECORD OF KERITE

KERITE INSULATED WIRE & CABLE COMPANY

NEW YORK CHICAGO SAN FRANCISCO

Alphabetical Index to Advertisers Page 44 Classified Directory of Advertisers Page 40

Steel-Tired Wheels

THE superiority of "Railway" Steel-Tired Wheels has been effectively demonstrated by the excellent service obtained from this equipment on many of the leading railroads in this country and abroad.

They have been especially designed to meet the most exacting requirements of modern operating conditions, while their manufacture embodies the highest grade workmanship and materials. We are prepared to furnish various types of steel-tired wheels with cast iron, cast steel or forged and rolled steel centers fitted with either Latrobe or Inter-Ocean Tires. The centers and tires are turned and bored to standard gauges and are interchangeable.

Railway Steel-Spring Company

30 CHURCH ST., NEW YORK

Branch Offices:

Chicago, Ill.	Detroit, Mich.	Richmond, Va.	Pittsburgh, Pa.	Montreal, Que.
St. Paul, Minn.	Dallas, Texas	St. Louis, Mo.	Denver, Colo.	San Francisco, Cal.

Published weekly by Simmons-Boardman Publishing Company, 34 North Crystal Street, East Stroudsburg, Pa. Application made for entry of the second class at the post office at East Stroudsburg, Pa., January 14, 1928, under the act of March 3, 1879.

Railway Age

Vol. 84 January 14, 1928 No. 2

On the Boston and Maine at West Medford, Mass.

Contents

What One Year's Service on Concrete Roadbed Has Shown . Page 129

Paul Chipman, valuation engineer of the Pere Marquette, tells of observations on quarter-mile test installation on his road.

St. Paul Reorganization Authorized 134

I. C. C. finds plan imperfect but prefers termination of receivership—Four commissioners dissent.

Pennsylvania Installs Code System of Train Stop with Signaling 139

Four indication cab signals, power immune from foreign current and position lights included in installation on 1492 track miles.

EDITORIALS:

Joint Operation of Motor Coaches 125
Adequate Maintenance of Electrical Equipment 125
Shippers and Car Miles 125
The Growing Air Mail Service 125
Close Locomotive Inspection Brings Results 126
Marvin Hughitt 126
Less Interest in Railroad Stocks 126
The Stockholders Equity in the Railways 127
Is a Rigid Track Practical? 128

GENERAL ARTICLES:

What One Year's Service on Concrete Roadbed Has Shown, by Paul Chipman 129
Confirmation of Esch Re-appointment Opposed 133
St. Paul Reorganization Authorized 134
Freight Car Loading 138

GENERAL ARTICLES—Continued

Pennsylvania Installs Code System of Train Stop with Signaling 139
Railway Unification Legislation Urged 142
Annual Report of the Bureau of Locomotive Inspection 144
Pullman Car Is Gas Heated During Lay-Over 146
Southern Class Rates Revised 147
Death of Charles Morgan Kittle 148
N. A. T. Country's Largest Air Transport Line 149

NEW BOOKS 153

LOOKING BACKWARD 153

ODDS AND ENDS OF RAILROADING 154

NEWS OF THE WEEK 155

Published every Saturday by the Simmons-Boardman Publishing Company, 34 North Crystal Street, East Stroudsburg, Pa., with executive offices at 30 Church Street, New York.

Simmons-Boardman Publishing Company, 30 Church Street, New York

EDWARD A. SIMMONS, *President*
L. B. SHERMAN, *Vice-Pres.*
HENRY LEE, *Vice-Pres. & Treas.*
SAMUEL O. DUNN, *Vice-Pres.*
F. H. THOMPSON, *Vice-Pres.*
C. R. MILLS, *Vice-Pres.*
ROY V. WRIGHT, *Sec'y.*

CHICAGO: 105 West Adams St.
WASHINGTON: 17th and H Sts., N. W.
CLEVELAND: 6007 Euclid Ave.
SAN FRANCISCO: 74 New Montgomery St.

Editorial Staff

SAMUEL O. DUNN, *Editor*
ROY V. WRIGHT, *Managing Editor*
ELMER T. HOWSON, *Western Editor*
H. F. LANE, *Washington Editor*

B. B. ADAWS
C. B. PECK
W. S. LACHER
C. W. FOSS
ALFRED G. OEHLER
F. W. KRAEGER
E. L. WOODWARD
J. G. LYNE
J. H. DUNN
D. A. STEEL
R. C. AUGUR
R. A. DOSTER
JOHN C. EMERY
MARION B. RICHARDSON
L. R. GURLEY
H. C. WILCOX
R. S. KENRICK
NEAL D. HOWARD
F. M. PATTERSON
RICHARD W. BECKMAN
LLOYD GEORGE
CHARLES LAYNG
GEORGE E. BOYD

The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.).

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free; United States, Mexico and Canada, $6.00. Foreign countries, not including daily editions, $8.00.

Subscriptions for the fourth issue each month only (published in two sections, the second of which is the Motor Transport Section) payable in advance and postage free; United States, Mexico and Canada, $1.00; foreign countries, $2.00. Single copies, 25 cents each.

Balsam-Wool

The increasing number of car builders using Balsam-Wool is an endorsement of its efficiency and economy

WHERE Balsam-Wool Refrigerator Car Insulation is used you may expect more efficient refrigeration for these reasons:

The cellular wood fibres that compose the Balsam-Wool mat contain millions of dead air cells—is 95% "still" air. That is why it has such high insulating value and weighs so little.

Its light weight saves many ton miles of dead haul—a saving of from 1400 to 2240 pounds per car has been demonstrated in those insulated with Balsam-Wool.

Its tough kraft liners are elastic—they stretch and give under strain. Their asphalt coating renders them waterproof.

The fluffy wool mat is self supporting, will not settle, is sanitary and odorless. Chemical treatments render it resistant to fire and decay.

Its *flexibility* makes it easy to apply, especially in the hard-to-fit places.

Balsam-Wool Refrigerator Car Insulation has been developed in conformity with the best engineering standards. Its widespread acceptance by car builders is the reward for the patient effort devoted to the production of an ideal insulation for walls and roofs of refrigerator cars.

Complete information and samples will be furnished to car builders or railway officials on request.

WOOD CONVERSION COMPANY

Insulation Division of Weyerhaeuser Forest Products

Mills at Cloquet, Minnesota

Industrial Sales Office: 360 N. Michigan Avenue, Chicago, Illinois

Manufacturers of Balsam-Wool Refrigerator Car Insulation and Steel Car Insulation; Balsam Wool Standard Building Insulation and Balsam-Wool Insulation for Domestic Refrigerators, Motor Buses and Airplanes.

Railway Age

Vol. 84, No. 2 January 14, 1928 Table of Contents Appears on Page 5 of Advertising Section

Joint Motor Coach Operation

A suggestion has been made by a well-known railroad officer that the railroads, where they are faced with severe highway competition, might consider the possibilities of joint motor coach services. The idea seems to have much in its favor. If each railroad in a given territory were to undertake to provide its own motor coach service, the services, at the beginning at least, might be small and individual operations widely scattered—particularly if the area were thinly populated. Widely scattered operations are difficult to supervise and are, generally speaking, not as economical as those which can be concentrated. Concentration aids supervision, insures an economical daily mileage from each vehicle and simplifies maintenance problems. Where a road's territory is such that it can alone provide motor coach service of this character there will be little incentive toward combining with others to provide a joint service. On the other hand, there must be many locations where joint action would solve the problems which now stand in the way of economical motor coach operation by the railways.

Adequate Maintenance of Electrical Equipment

EXPERIENCE is often a costly teacher, but usually an excellent one insofar as the maintenance of railway electrical facilities is involved. It is too often true that electrical failures due to inadequate maintenance develop at the most inopportune time, entailing train delays if the equipment happens to be installed for such essential service as bridge operation or coal and water handling. Failure of motor control equipment on a large bascule bridge carrying heavy freight and passenger traffic in one of the large railway terminals tied up the operation of the terminal so completely that the superintendent found it necessary to hasten to the bridge himself to find out what was wrong. The bridge was provided with an emergency gas engine power plant, but when the bridge operator attempted to cut it into service he was unable to do anything with it. To begin with, he was not sufficiently familiar with its operation to know how to start it and connect it to the driving gear of the bridge. Summoning the assistance of the interlocking maintainer who was not supposed to have anything to do with the bridge operating equipment, it was discovered that there was no gasoline in the fuel tank and no water in the radiator. After much spitting and misfiring the engine "came to" and started on its job of raising the bridge, only to stop after the span was about half raised. Continued nursing of the engine brought it to life again and the bridge was finally raised. Rail traffic was delayed about 45 minutes before the span was again lowered into position. It did not take the superintendent long to decide that proper maintenance of the electrical and emergency power facilities would be fully justified at this location. Instructions were issued immediately to the electrical foreman to make a weekly inspection and to the bridge operator to raise and lower the bridge with the emergency power plant at weekly intervals to insure that it would function in emergency.

Shippers and Car Miles

IT is doubtful if a majority of shippers know the meaning of "average miles per car per day" or what the advantages of high average car miles are to a railway. This is not as it should be, for a car in carload service is in the hands of the public, as represented by the shippers and consignees, a large part of the time. Since this is the case, the shippers and consignees have a not inconsiderable control over "car miles," whether or not they know what the term means. The regional advisory boards have done much to educate shippers as to the value of increased car utilization, but local officers of the railways who are in touch with the patrons can do much more. They should work closely with shippers and receivers to induce them to load and unload cars without delay; they should also encourage capacity loading. The local agents should endeavor to work out schedules based on existing train service, so that cars may be forwarded on the day of loading. Before signing bills of lading for cars destined to terminal points, agents should insist that the consignee's street address be shown and, if possible, the name or number of the delivery track. In this way the shippers may be educated in car values and become helpful in increasing average miles per car per day.

The Growing Air Mail Service

STATISTICS published by the Air Information division of the Department of Commerce indicate that the day is not far distant when air mail service will be readily available to persons in all parts of the country. When the 25 air mail routes now operating under contract or advertised for bids are all in service they will serve directly by air, or by air and rail, 62,299,409 people in the various trading areas along the airways. These 25 routes will have 79 station stops and will aggregate 11,856 miles in length. Information published by the Department of Commerce also indicates that the air mail traffic is having a healthy growth. In October, a total of 153,649 lb. of air mail was handled, this representing an increase of 7,163 lb. over the total poundage handled by the air mail routes in September. The hazards of the air mail appear to be only in the imagination of the uninformed. A total of 9,000,000 lb. of air mail was carried in the period from 1918, when the first air mail service in this country was inaugurated, to November 1, 1927. Of this amount only 2,386 lb. of mail was lost or destroyed, or 0.0265 per cent. Such records of expansion, of increasing traffic, and of reliability in operation point to but one conclusion—that the air mail service is building a firm foundation upon

which will rest the structure of general and widespread air transportation in the United States.

Close Locomotive Inspection Brings Results

WITH a view to securing improved locomotive inspection and maintenance and consequently a greater utilization of motive power, an effective plan has been worked out on one road of taking the inspection out of the hands of the local maintenance forces and giving this responsibility to a mechanical inspector and limited force of shop and terminal inspectors reporting directly to the chief mechanical officer. An English railway officer reports that this plan has been carried still further by making the inspector and his staff report to the chief operating officer regarding both locomotive condition and performance. Doubtless, few would advocate the latter practice in this country, although in a limited number of cases fuel supervisors, who commonly function as part of the mechanical staff, have reported to the general manager or operating vice-president. The general idea of taking locomotive inspection out of the hands of the local shop and terminal officers is intended to prevent the urge for output overbalancing the desire for locomotives turned out in as nearly 100 per cent condition as possible. The plan has been tried extensively on at least one American railroad with gratifying results. Locomotive miles per engine failure have increased and the locomotives ordered out of service by government inspectors in a given period decreased substantially. Careful attention to wearing parts which failed has made possible strengthening these parts and effecting a highly desirable improvement in the standard of locomotive maintenance.

Marvin Hughitt

MARVIN HUGHITT, who died recently at the great age of ninety years, was one of the finest characters in a generation of railway executives which included such men as James J. Hill, E. H. Harriman, E. P. Ripley, A. J. Cassatt and Milton H. Smith. When he was born the steam railroad was only a few years old, and there were less than 2,000 miles of line in operation in the United States. Rising from the ranks, as did practically all the railway officers of his generation, he became general superintendent of the Chicago & North Western almost fifty years ago and president of it almost forty-eight years ago. He was the dominating spirit in the management of that railway until less than three years ago. The railway executives of his time were autocrats, and Mr. Hughitt for many years was probably as autocratic as most of them in his dealings with the personnel of his organization and with the public. At the same time, he was always animated by a high sense of duty to his officers and employees, his stockholders and the public. He was almost seventy years old when, more than twenty years ago, the beginning of effective federal regulation started a revolution in the railroad business which demanded that railway executives should assume a new attitude and adopt new methods if there were to be established relations between the railroads, on one side, and their employees and the public, on the other, that would save them from ruinous regulation and, finally, government owner ship. To adapt himself entirely to these changed conditions was impossible for a man of his experience, temperament and age. He did, however, bow to them with better grace than most executives of his generation, and with his characteristic reticence gave public expression to no resentment regarding them, although his resentment regarding government ownership was somewhat plainly shown by changes which were made in the North Western's organization on its return to private operation. His earlier career indicates that if he had been a younger man he would have been a leader in adapting railway management to the new conditions of recent years. He built up the Chicago & North Western into one of the greatest railway systems in the country. The contribution he thus made to the development and wealth of the West gives him rank among the leaders in creating modern America. Happily, after his life's work was virtually done, he survived in good health for many years to enjoy such leisure as he chose to take. His death has marked the passing of a generation of railway giants who did mighty work for their country.

Less Interest in Railroad Stocks

THE rise in the average price of railway stocks which amounted to some 20 points during 1927, was brought about in part by increased dividend rates on the stock of several railroads, in part by improvement in the earnings position of several important carriers, and in part by the decreased interest rates resulting from the large sums of capital which have of late become available for investment. The third factor mentioned was probably the most important of the three, because it affected all stocks, including those which may also have been affected by the first two factors. The fairly steady increase in the average price of railway stock throughout the year attracted the interest of the stock market to such an extent that for much of the year railroad stocks held more or less a position of leadership. This was the case particularly during the earlier part of the year when there was great excitement regarding merger possibilities, but such interest declined when it appeared that the attitude of the Commission was decidedly negative.

While, however, it is quite proper for railroad men to evidence a feeling of satisfaction that railroad stocks should again have become more or less popular, we should not forget that there is another side of the picture. Thus, while it is true that the average price of railroad stocks advanced 20 points during 1927, it happens that the average price of representative industrial stocks advanced some 45 points in the same period, and that 35 points of this advance occurred in the short space of the latter six months of the year. It will be observed, furthermore, that largely on account of this advance the prices of high-grade industrial stocks now tend to be higher than those of railroad common stocks paying the same dividend rates.

At the present moment the interest in railroad stocks is much less than it was during most of last year. The *Railway Age* average of the price of 20 leading railroad stocks has showed successive declines for a six-weeks period, although fortunately the total decline has not yet equalled a full point. Indeed, there is evidence enough that the financial markets are showing that they are fully aware of the recent falling off in railway earnings, of railway merger "impossibilities", of the unsatisfactory character of the St. Louis & O'Fallon decision, and of the difficulties met by the carriers in proving to the Interstate Commerce Commission the desirability of capitalizing the enormous equities which the carriers have built up in recent years, by paying for the better proportion of their capital expenditure program out of earnings.

The Stockholders' Equity in the Railways

THE Interstate Commerce Commission's complete statistics for 1926 are not yet available, but in the volume in which its annual report for 1927 has recently been issued there are given numerous statistics for 1926. In Table 3, page 108, it is shown that the "ratio of net income to stock" in 1926 was 9.44. The ratio of net income to stock is given for each year from that ending on June 30, 1908, and the figure for 1926 is the highest in the list. This might be interpreted as showing that in 1926 the stockholders of the railways received the largest average return on their investment per share since 1907, or even in any year. But the average return reported as earned on the total investment in the railways is shown in the same statistical summaries to have been 5.15 per cent, which was less than in 1909, 1910, or 1916, and only slightly larger than in 1917. The average dividend per share of stock reported as having been paid in 1926 is $5.06, which is less than that reported for 1908, 1911, 1914 or 1921.

In other words, the average net income per share of stock was in fact larger in 1926 than ever before, while the return earned on property investment and the average dividend per share of stock paid have shown no corresponding increase. It is worth while to consider why this has been the case. When the facts about how the development of the railways has been financed recently are studied it is soon found that, directly and indirectly, there has been over a long period of years a large and steady increase in the average investment in the properties represented by each share of stock and concurrently a marked decline in the percentage of return earned and paid upon the stockholders' average investment per share.

Investment and Capitalization

The total investment in road and equipment reported by the Interstate Commerce Commission for June 30, 1910, was $14,558,000,000. The Commission reports the "net capitalization" of the railways for each year by excluding from the securities reported as outstanding those actually owned by railway companies. The net capitalization in 1910—that is, the amount of securities actually outstanding in the hands of the public—was $14,375,530,000, or almost the same as the total investment reported. Of this, about $8,817,000,000 was funded debt. The difference between the total investment and the funded debt was $5,741,000,000, which represented the stockholders' equity in the total investment. The amount of stock actually outstanding in the hands of the public was only slightly less than this amount, and the stockholders' average equity per share of stock was $103.28.

It is impossible as yet to give corresponding figures for any year later than 1925. At the end of that year the investment in road and equipment reported had increased to $22,737,000,000, or about $8,180,000,000 since 1910. The net capitalization had increased to $18,191,000,000, or only about $3,700,000,000 since 1910. In other words, the increase in the net capitalization during this 15 years was less than one-half as great as the increase in investment. The net funded debt reported for 1925 was $11,305,000,000. The difference between this and the property investment reported was $11,432,000,000, which amount was the stockholders' equity in the total investment in the properties. The par value of the net stock outstanding at the end of 1925 was $6,885,000,000. When we divide this figure into the stockholders' total equity in the investment we get a figure of $166 as representing the stockholders' average equity per share of stock in 1925. This was an increase of $62.75, or about 60 per cent, over the corresponding figure for 1910. In the absence of complete figures for 1926 we have made estimates which indicate that the stockholders' equity per share of stock at the end of that year was $174.43.

Large Investment from Earnings

A railway has virtually only two sources from which it can get funds to invest in its property. It may raise them by selling securities, or take them out of earnings. As from 1910 to the end of 1925 the investment in the railways increased almost $4,500,000,000 more than their net capitalization, the presumption is that the funds for this vast amount of investment were derived directly or indirectly from earnings. We say this is the "presumption" because it is not possible to establish it as a fact by the available statistics; but there seems to be no other source excepting earnings from which any substantial part of it could have come. Assuming it was derived from earnings, they were earnings that legally belonged to the stockholders and could have been paid out to them in dividends. If all the available net income had been thus paid out the resulting dividends would not have been excessive. It necessarily follows that, exclusive of funds raised by increasing indebtedness, all the investment made in the railways was made by the stockholders either through the purchase of stock or by the investment of earnings which actually belonged to them and which, without any impropriety, might have been paid out to them in dividends, whether it would have been financially wise to have done so or not.

The facts, then, appear to be that from 1910 to the end of 1926 the stockholders' average equity per share in the investment in the railways, upon which they had a right to expect a return to be earned and paid, increased from $103.28 to $174.43. What, meantime, was the trend of the return earned and paid upon this equity? The Interstate Commerce Commission not only computes the "net capitalization" of the railways, but also publishes in its annual statistics an income account statement for the railways "considered as a system," from which duplications of income are, as far as practicable, excluded.

Income Upon Stockholders' Equity

The year 1926 was the most prosperous the railways have had since the war. The earnings made in that year resulted in many railways beginning to pay dividends or increasing dividends already being paid. Market prices of railway stocks have largely increased, and it has been widely assumed that the stockholder is now receiving an unusually big return upon his investment. In the accompanying table are given statistics based upon the commission's annual income accounts of the railways considered as a single system from the year 1910 to 1925, excepting 1918, 1919 and 1920, for which comparable figures are not available owing to the government guarantees in those years. Estimated statistics are also given for 1926. In the third and fifth column are given average annual net income per share of stock and average annual dividend paid per share, these figures being based upon the par value per share. In the fourth column is given the average annual percentage of net income on the stockholders' equity per share, and in the sixth column is given the average annual percentage of the dividend paid per share upon the stockholders' average equity per share.

The most significant figures are those in columns four and six. The average net income upon the stockholders' equity per share was larger in 1910 than in any subsequent year excepting 1916. The figures in column six

show that the average dividend paid in 1910 gave a yield of 5.12 per cent on the stockholders' average equity per share, and that ever since the general tendency of this yield has been downward. In 1925 it was only 2.84 per cent, and our estimates indicate that even in 1926 it was only 3.17 per cent.

Stockholders' Average Equity and Income Per Share

YEAR	Stockholders' average investment (or equity) per share of stock	Average net income per share of stock	Net income (per cent) on stockholders' equity per share	Average dividend paid per share	Per cent average dividend paid on stockholders' equity per share
(1)	(2)	(3)	(4)	(5)	(6)
1910	$103.28	$8.48	8.21	$5.29	5.12
1911	109.67	6.56	5.98	4.96	4.52
1912	115.17	6.08	5.28	5.16	4.48
1913	(a) 120.92	7.52	6.22	4.47	3.69
1914	(a) 123.08	4.75	3.86	5.62	4.57
1915	118.51	5.79	4.89	5.32	4.49
1916	123.54	11.63	9.41	5.81	4.70
1917	133.00	8.65	6.50	4.46	3.35
1921	148.65	4.00	2.69	5.49	3.69
1922	148.89	5.62	3.78	4.05	2.72
1923	152.03	8.31	5.47	5.00	3.29
1924	158.48	8.07	5.09	4.50	2.84
1925	166.03	10.11	6.09	4.71	2.84
1926	(b) 174.43	11.54	6.61	5.52	3.17

(a) For Classes I and II Railways and their non-operating subsidiaries.
(b) Estimated.

The trends shown by the statistics in this table are, first, a steady increase in the stockholders' equity per share; second, increasingly wide fluctuations in net income on par value per share; third, a decline, excepting in the most prosperous years, in the percentage of net income on the stockholders' equity per share; fourth, no increase over periods of years in the average dividend paid per share of stock; and, consequently, fifth, a steady decline in the percentage yield of the dividends actually paid upon the stockholders' equity.

The facts presented raise questions regarding both railway regulation and railway financing. In the railroad and every other business stockholders increase their investment, insofar as they do so voluntarily, with the purpose and expectation of getting increases in net income and dividends in proportion to the increases in their investment. Such increases in net incomes and dividends the stockholders of American railways have not received. This has been partly due to a policy of regulation which, over periods of years, has prevented the net income of the railways from increasing in proportion to the increased investment made by the stockholders. It has also been partly due to the policy of railway managements, which, within the last fifteen years, has been to pay out in dividends a declining proportion of net income and to retain an increasing proportion of it for investment in the properties. Prior to fifteen years ago the stockholders usually received in dividends two-thirds or more of the net income per share. Since then the proportion of the net income paid out to them in dividends has been declining. In 1925 and 1926 it was less than one-half of the net income, although recent increases in dividends undoubtedly made them larger in proportion to net income in 1927. It is, however, a question well worthy of consideration whether in future the railways should not try to pay larger dividends, and to finance more largely by the sale of stock and to a relatively smaller extent by the investment of earnings.

A Question of Railway Policy

As a result of the policy of financing followed average net income reported per share for the railways as a single system has increased from about $8.50 in 1910 to about $11.50 in 1926. These figures, and similar figures that can be and are cited for individual railways, give a wholly misleading impression that there has been a great increase in the prosperity of the railways. Is it wise for them to be so financed as to invite exaggerations of their prosperity and, in consequence, unreasonable demands for both advances of wages and reduction of rates? The actual dividend return upon the stockholders' equity per share has been constantly declining. Is this fair to the stockholders? A more practical, if not more important, question is as to whether a method of financing that leads to such results is sound as a matter of railroad policy.

While since 1910 the total investment in the railroads has increased almost $9,000,000,000, the amount of their stock outstanding in the hands of the public has increased only about $1,500,000,000. The result has been that there have been no increases in the number of railway stockholders and in the amount of stock owned by them anywhere near in proportion to the increase in the investment with the protection of which the managements are charged. Would not the managements be in a much better position to defend railway properties from unfair and dangerous attacks if there was a larger volume of stock outstanding in the hands of persons who would realize that their incomes would be adversely affected by regulation or other developments that would reduce railway net earnings? The huge amount of financing that has been done within recent years from earnings has been done largely, but not entirely, because so many railways have not been able to sell stock. Should they not in future take greater advantage of opportunities to issue stock?

Is a Rigid Track Practical?

IS a certain amount of resiliency necessary in track construction? This has been a much debated subject for years. On the one hand there are those who contend that a certain amount of "give" is necessary to absorb the shocks of equipment and avoid shaking it to pieces. On the other hand, are those who contend with equal insistance that uniformity of surface will eliminate these shocks and avoid the necessity for a cushioning effect. In part modern track construction is tending to provide the answer. As wheel loads and speeds have increased the component parts of the track structure have been strengthened to withstand this service, until today modern track on trunk lines consists of 130-lb. rail on 7-in. by 9-in. ties, embedded in 18 in. or more of crushed stone ballast on a well-formed and well-drained sub-grade. Such construction affords a far more rigid structure than that of two or three decades ago; yet it is recognized as necessary to carry the traffic of today.

A still further and more conclusive answer to this question is afforded by the quarter-mile experimental section of concrete slab-supported track on the Pere Marquette. This installation has now been in service for slightly more than a year—a period insufficient to demonstrate that this form of construction will stand up indefinitely, and yet sufficient to show that it embodies no basic defects. Some difficulties have been encountered, as pointed out by Paul Chipman, co-designer of this installation, in an article on a following page of this issue, but they have been in details only. In the main the slabs have done all that might reasonably be expected of them under the moderately heavy traffic that is moving over them, without restrictions as to speed. The results of this installation are sufficiently encouraging to lead the Pere Marquette to contemplate other installations of a similar character in the near future. It may, therefore, be said to offer a fairly definite answer to the long debated question regarding the necessity of resiliency in the track structure.

What One Year's Service on Concrete Roadbed Has Shown

A discussion of the ideas underlying the Pere Marquette design and the results shown to date

By Paul Chipman
Valuation Engineer, Pere Marquette

THE experimental section of concrete roadbed installed by the Pere Marquette in December, 1926, is 1326 ft. long and is located in the westbound main of a double-track section near Detroit. It consists of thirty-four 39-ft. slab sections 21 in. thick and 10 ft. wide. In addition to ordinary reinforcing bars a light steel truss is imbedded in the concrete directly beneath each rail. The upper chord of this truss consists of two ¼ in. by 4 in. steel plates placed vertically with the upper edge slightly below the surface of the concrete. These trusses are connected with each other at intervals by brace frames and adjustable tie rods. Attached to the steel plates at proper intervals are steel stirrups, which afford a means of attaching the rail fastenings. The rails are held in place by clips which are bolted to these stirrups.

The Origin of the Idea

Some three years ago Frank H. Alfred, president and general manager of the Pere Marquette, was driving on a new concrete road in Ohio at a point where the highway paralleled an interurban line for quite a distance. At intervals he passed small section gangs laboriously lifting low joints, tamping ties or performing other tasks which a section gang performs day after day, world without end. It started a train of thought in his mind. "If a state finds it economical to do away with good gravel roads and provide a permanent concrete roadway for automobiles, trucks and buses at a cost of $50,000 per mile," he said, "why wouldn't it pay the railroads to do the same thing for their immensely greater tonnage?" He continued, "It ought to be possible to build a track that would stay put, with practically no expense for maintenance except for renewing the rail."

The Pere Marquette is watchful of its pennies. It got the habit when they were scarce, in that long, lean period between the passing of the forest and the coming of the automobile. It is the perfect Scotchman among the railroads. But, like the true Scot, it will spend a dollar any time when it is sure of getting two in return—within a reasonable time.

Nothing came of this discussion for some time. During this period Mr. Alfred, in an address at the annual dinner of the American Railway Engineering Association, touched upon the subject in a way that reawakened interest in the minds of many engineers who had given it some thought at one time or another. But now the leaky flues of doubt began to dampen the fires of enthusiasm. Would not the impact on a solid roadbed hammer the rail as flat as a pancake and jar the rolling stock to pieces? Would not the heaving of frost and the settlement of embankments ruin the surface and destroy the track foundation? In an effort to answer these questions, the history of previous efforts along this line was reviewed, including a study of suggested designs and everything that had been written on the subject.

Are Rail Supporting Blocks Necessary?

It was found that the trouble encountered in former experiments, notably those of the Northern Pacific, lay not in the concrete foundation, but in the blocking that was used to separate the rail from the foundation. Naturally the question arose, "Why make such a separation?" The only answer was that it had always been done. True, J. W. Shaub, in 1899, proposed a design in which the rails would rest directly on longitudinal stringers of concrete and quoted Col. H. G. Prout as follows:

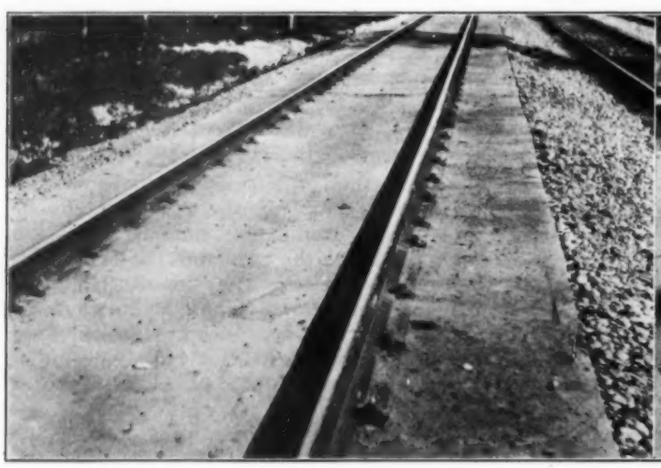
"I am inclined to think that, if the roadbed could be made absolutely unyielding, the springs of the vehicles providing the elasticity, the best results would be had. I the track could be as smooth and relatively as stiff as a planer bed there would be a saving in the cost of maintenance of track and machinery and in coal consumption. The stiffer the rails, the less the creeping due to the wave which runs ahead of the wheels, the less the wear of the ties due to this motion, the less the destruction of the track and running gear due to the pounding of the wheels and the easier the hauling of the trains."

But Mr. Shaub evidently came to the conclusion that this was too radical a departure from existing standards, for in 1907 he proposed another design in which cross ties and ballast were used, the end of the ties being supported by steel I-beams, placed longitudinally, which also served to retain the ballast. He proposed that later the I-beams be removed and the ballast replaced with a concrete slab; but had evidently given up the idea of placing the rails directly on the concrete, for he said that the "superstructure should be some form of longitudinal support bedded in concrete so as to distribute the loads over large areas, offer perfect drainage and be absolutely unperishable and unyielding." Even the Portland Cement Association worked out a design in which the rail was supported on wooden blocks. Since Mr. Shaub's defection, nobody had the temerity to propose that the rails rest directly on the concrete. Opinion appeared to be unanimous that there must be a cushion of some resilient material between

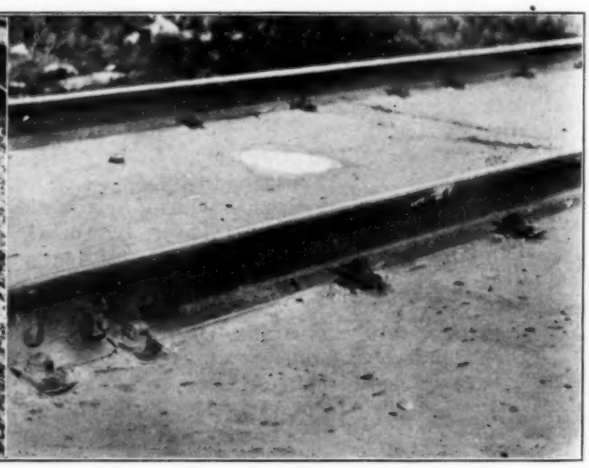
* From a paper presented before the Maintenance of Way Club, Chicago, on Dec. 21.

the rail and the concrete to lessen shock due to passing loads and prevent deterioration of the concrete base, battering of the rail, and injury to rolling stock. True, some street railways were using girder rails resting on concrete; but this was a different condition, where loads were much lighter and the rails, in addition to resting on concrete, were completely imbedded in it.

As we studied the subject, the conviction grew that there was a confusion of thought in this matter. It had been assumed that the shocks and jars experienced when a train passes over ordinary track would still exist on track of a rigid type; and that due to such rigidity the damage to track and equipment would be greater. The conclusion was correctly drawn, but we doubted the major premise. On a perfectly smooth and rigid track, why should there be any shocks? If no shocks, why should there be any hammering of rail and roadbed? Furthermore, by supporting the rail rigidly throughout its length the rail-wave, with all its attendant evils, would be banished. But would the concrete stand the strain? Why should it not? Surely, a 90-lb. rail could be counted on to distribute its load evenly over a longitudinal distance of 10 in., thus giving 50 sq. in. of concrete to support 30,000 lb., or a pressure of 600 lb. per sq. in. or, allowing 50 per cent for impact due to counterbalance, a pressure of 900 lb. In these days of 5,000-lb. concrete, that did not seem out of reason, especially when it is realized that compression tests of concrete are made by applying pressure to the ends of short cylinders, and that the strength of concrete under a load applied to a limited portion of its surface has never been determined, although known to be much higher than that shown by the standard tests.



A View of the Finished Track



A "Close Up" of the Rail Fastenings

Is a Rigid Track Construction Practical?

Past experience indicated that a cushion of wood or other resilient material would become a continual source of uneven track and expense for renewals. Further, it did not do away with the rail wave, which would no doubt lose some of its customary vigor, but would still be much in evidence. It became more and more apparent that the advantages of a permanent roadbed could not be obtained unless a rigid type of track were proven to be practicable; and that the primary purpose of our experimental installation, if made, would be to determine this point.

The problem then was to construct a support for the rail that would be wide enough to so distribute the load as not to exceed the bearing power of rather soft soil and of such strength as to span safely any very soft spots of ordinary size; to produce a rail seat that would be in as nearly perfect line and surface as it could be made; to design adequate rail fastenings; and if possible, to devise some means by which the concrete slab could be restored to its original elevation in case of pronounced settlement of the embankment.

There was one point on which we had serious misgivings, due largely to our experience with some concrete ties installed for experimental purposes at Saginaw about 25 years ago. In a few of these ties the rail rested directly on the concrete. These ties are still doing service; but, although they are otherwise in good condition, the rail has cut down into the concrete an inch or more and has come to rest on the steel reinforcing bars. Would the same thing happen on a slab where the rail was continuously supported and not subject to any considerable vertical movement? Would the effect of repeated shock and the small amount of vertical and lateral motion, which cannot be absolutely eliminated, be to abrade the concrete very slowly and cut a groove beneath the rail? Probably not, but we were afraid to take a chance and thought it desirable to provide a metal seat for the rail.

This feature and the necessity for some means of providing a rail seat that could be set to exact line and surface and be kept there while concrete was being poured, led to the adoption of the light trusses under each rail. A width of 10 ft. was decided on and a thickness of 18 in., later increased to 21 in. The bolt and clip were chosen as the most practical rail fastening, as it was considered important that the rail be held tightly to the base. The bolts, placed head up, were to be held by nuts placed in the concrete below a stirrup which engaged the two steel plates which formed the upper member of the truss.

President Alfred thought that if our ideas were submitted to the engineers and railroad men of the country through the medium of the technical press, we might receive some helpful criticism and at any rate arouse an interest which would result in other experiments along this line. Accordingly this was done. (See *Railway Age* of Dec. 12, 1925, page 1083.) The Portland Cement Association assisted by broadcasting a reprint of one of these articles and asking for comment thereon. A considerable amount of interest was shown.

But the result as to constructive criticism was disappointing. Two or three thoughtful studies of the subject were made, but the net result in the way of new ideas was practically nothing. Adverse comment was frequent, and as might be expected, the main point of attack was the lack of flexibility. The chief engineer of one railway wrote: "I do not consider this a practical design." This was, of course, very helpful. One thing that did result, however, was a deluge of communications from cranks of varying degrees of sanity, who asked for opportunity to try out their ideas on the Pere Marquette. Most of these schemes were devised by persons who had no knowledge, practical or theoretical, of the requirements of track structure or appliances or how these requirements could be met.

Experimental Installation Decided On

It was now definitely decided that an experimental section would be installed. The design was modified slightly, not on account of any helpful suggestions which we had received from outside, but because we had come to realize that the real object of our experiment was to prove a principle and not to test the adequacy of any design. It was to settle the question whether or not a rigid track is practical. We felt that if it could be proven that flexibility was not essential to a track structure, a design would eventually be worked out by somebody that would meet the requirements. Economy of design was therefore a secondary consideration; but it was of the utmost importance that we take no chance in this initial installation of having a failure that would discredit our proof, if such were obtained, of the practicability of rigid track. Even though such a failure might have no relation to this predominant problem, it would be sufficient proof to the prejudiced or unthinking of the impracticability of any radical change in the present type of track. With this in mind, the thickness of the slab was increased to 21 in. and the amount of reinforcing metal was materially increased. The materials were now ordered, the most favorable location that we could find was selected and we prepared for construction.

When construction began, a number of things were learned. About the first one was that our steel trusses were not true enough to serve as rail seats. We found that the concrete could be finished to a truer surface than that afforded by the edges of the steel plates. It was therefore decided to finish the concrete about ⅛ in. higher than the steel. It was also found that these trusses were not in as true a line as was required for our rail fastenings, so that it was necessary to line them up with heavy angle bars bolted to the surface. When the design was made, no particular attention was given to the installation of the rail; but the location finally decided on was in block signal territory. The design we had adopted could scarcely be improved upon as a means of dissipating any electric current in the rail. It was necessary to provide means of insulation.

This was well taken care of as to the rail clips by means of fibre plates and bushings, and as to the rail seat, our ⅛ in. of concrete between the rail and steel plates was helpful. It was anticipated, however, that this would not afford sufficient insulation, as there would be a few places where the steel would be very close to the surface. Furthermore, a rail might in the course of time, wear down into the concrete so that it would be in contact with the steel plates at many places. It was therefore expected that eventually it would be necessary to use a sheet of insulation fibre under the rail. As an experiment, however, an asbestos felt and asphalt composition known as fibrerock was used.

The pouring of concrete was not begun until early in November. Before the work was finished on December 2, there was some rather cold weather, which made it necessary to heat the water and at times the sand. The mixing and placing of the concrete was under the supervision of the representatives of the Portland Cement Association, who also relieved us of the keeping of records, as they maintained a record system which covered all features of the work, including a very complete series of photographs. Three test cylinders were made from the concrete used in each 39 ft. section. The excellence of the concrete, due in a large measure to this careful supervision, is proven by the results of these tests. The instrument work involved in securing a true and correct line and surface for the rail seat and fastenings was quite exacting.

Laying rail at the west end began shortly before the completion of the concrete work at the east end. The first train was put over on December 19. A speed limit of 30 m.p.h. was maintained during the winter and early spring, after which time it was raised to 45 m.p.h.

Observations from the First Year's Use

What conclusions are to be drawn from the first year of operation, which was concluded two days ago? First, in regard to the main question, whether a rigid roadbed is practicable or whether a railroad track must have more or less flexibility, I think we may say that the practicability of a rigid roadbed, provided it is also a smooth one, has been proven beyond a doubt. A year's traffic has not resulted in any disintegration of the concrete beneath the rails nor in any undue battering of the rails themselves. The effect on rolling stock cannot, of course, be determined definitely by a test section a quarter of a mile long; but a ride over this section is enough to bring the conviction that there can be no bad effect. The train glides along so smoothly that one feels, with the elimination of the wear and tear due to the ups and downs of ordinary track, that a considerable saving in maintenance of equipment may be anticipated.

On the receiving rail at the 68 joints, the amount of batter, as defined by the Committee on Rail of the A. R. E. A., is as follows: one joint has a batter of 3/64 in.; 9 joints have a batter of 1/32 in.; 16 have a batter of 1/64 in., and in 42 the batter is too small to measure. It would be hard to find a piece of ordinary track in use a year, under like traffic, that would show a better record. There are, however, a number of joints with a type of rail batter which is not so common on ordinary track. Here, the receiving rail is not battered at the end, but from 2 to 6 in. from the end a slight depression begins which varies in length from 6 to 18 in. Under the A. R. E. A. definition, this would not be classed as batter, as this definition calls for the use of a 12 in. straight edge and measures the batter by the distance between the surface of the rail and the straight edge at a point ½ in. from the end of the rail.

In my opinion, this type of batter is due to the delivering rail being slightly higher than the receiving rail. It takes 1/32 of a second for a body to fall 1/64 in. In that time a wheel moving at the rate of 30 miles an hour would be about 16 in. from the joint, at which point the wheel would strike the rail. It hardly seems possible that the impact due to a fall of 1/64 in. would have any effect on the rail surface; but when we consider the enormous compressive stress developed in the small area of contact between the wheel and the rail under normal conditions, it is easy to believe that

the additional stress due to impact would result in some distortion of the rail surface. The indications are that there will be very little battering with this type of roadbed, except that due to inequality in the heights of adjoining rails. If this proves to be the case, grinding the high rail may prove advantageous. However, observation of the end of the delivering rail inclines one to the belief that batter of this type tends to correct itself by the wearing down of the delivering rail, and that after a certain stage is reached, its progress will be slow.

In finishing the concrete rail seat no attempt was made to perfect the finish on any portion that would not lie immediately beneath the rail. This resulted, at places, in a slight ridge just outside of the rail seat, which makes it hard to be certain that there has been no abrasion of the concrete under the rail; but the fact that such apparent depression occurs only for short distances indicates that it is due entirely to the way in which the rail seat was finished, as the conditions which would cause wear are practically the same throughout, both as to the quality of the concrete and the motion of the rail. If, in the course of time, abrasion develops, it will prove the necessity for providing a metal bearing for the rail, as was done in the present installation. If it does not develop, the design can be simplified accordingly.

Some Settlement Has Appeared

The other question of major importance is whether or not a roadbed of this type will retain its original smoothness. After the first year's operation our test section rides as smoothly as at the start. Levels taken from time to time show that while there was a slight and gradual settlement for a time, it was fairly uniform over the whole installation. Levels were taken on December 14, 1926, five days before operation began and on December 30, 1926, eleven days after operation began; also on February 9, April 12, August 25, and December 12, 1927. These levels were taken at the ends of each of the 39 ft. sections, a reading being taken adjacent to each rail. On December 30, 1926, the minimum settlement was zero and the maximum settlement was 0.08 ft. The greatest variation in 39 ft., the length of a section, was 0.04 ft., but in most cases the change in this distance was only 0.01 or 0.02 ft. The greatest difference between two rails at any point was 0.02 ft. and in most places there was either no difference or 0.01 ft. The average settlement after 11 days of operation was 0.038 ft., being the same for both rails. On December 12 the maximum settlement was 0.12 ft. the minimum 0.03 ft. the other measurements showing no change. Readings were only taken to hundredths of a foot, as the roughness of the concrete surface made it impractical to attempt greater precision. Many of the apparent differences of 0.01 ft. between the rails are also due to this fact.

As a whole the roadbed settled 0.038 ft. in the first eleven days after operation began, an additional 0.037 in the next six weeks, and 0.015 in the following two months. Practically no settlement occurred after April 12.

The amount of this settlement is rather surprising. The west half of the section was built over what had been a very shallow excavation, and the same is true of the south side of the east half. The north side of the east half was over a light embankment of sand varying in depth from nothing to 2½ ft. The side over the fill has not settled any more than the side over the cut. The bottom of the slab was level with the bottom of the old ties, so that the ballast under the ties was not disturbed. Evidently, the ballast was driven down into the sub-grade, as after three years of traffic, the ballast must have been fully compacted. It is well known that this action occurs in the case of ordinary track, but it was hardly to be expected under a continuous slab. The other surprising feature about this settlement is its uniformity. The variation in settlement is so gradual that it has had no effect whatever on the riding quality of the track. It is not likely that this installation will ever call for lifting any of the slabs in order to restore the old grade.

Last winter was rather mild and it is not probable that there was much, if any, frost under the concrete. With the thorough drainage provided by placing the concrete on top of the old ballast and by laying a tile drain close to the inner edge of the slab, it is doubtful if there would be any heaving during the most severe winter that may be expected in this latitude. This, however, is one of the things that is yet to be demonstrated.

Concrete Is in Excellent Condition

The concrete is in excellent condition. In slabs numbers 1, 11, 33 and 34, hair cracks have appeared which extend the full width of the slab. In slab 1 this marks a construction joint located about 10 ft. from one end, delays incident to starting the work having made it impossible to finish this slab on the first day. Slabs 33 and 34 were laid in very cold weather, although this may not be the reason for the cracks. None of the cracks show any indications of widening, and levels fail to show any deflection at or near the cracks. It was expected that some such cracks would appear. With the exception of slab 1 they are all near the center of the sections in which they occur.

When operation began, the rail on the east approach started creeping westward in the direction of traffic and pushed the rails on the concrete forward until the joints were closed for several hundred feet. The rail was put back in place and the approach thereby anchored; since that time there has been no trouble with creeping. The maximum movement has probably not exceeded three inches.

The sound made by a train in passing over this section is different from that on ordinary track. There is a rumble that has a touch of metallic clang, probably due to the reflection of the noises made by wheels and trucks from the surface of the concrete. However, there are no clicks when the wheels pass over the rail joints. Probably the sum total of the noise is no greater than on ordinary track, although its quality is different.

Some Possibilities for Improvement

Our experience with this test section has brought to light a number of ways in which the present design can be improved. The fibrerock which was placed under the rail was found to be unsuited for the purpose. This material has little strength when saturated with water and in spite of its asphaltic content, is quite absorbent. After becoming wet the edges dry before the center, and the lateral motion of the rail is sufficient to split the material and cause it to work out at each side of the rail. After this happened, trouble was experienced with signals after a rain. This trouble was found to be, for the most part, near the west end, where in two or three places the steel plates came close to the surface. This was relieved temporarily by blocking the rail up on small pieces of insulating fibre, but trouble was still experienced during and after rains. Within the next few days a strip of insulating fibre will be placed under one rail for the entire length of the section. The whole problem of insulation can be solved

by so changing the design that the rail will not be in contact with or close to any other metal which would convey current to the ground or to the other rail. If it is necessary to provide a metal bearing for the rail, such bearing must not be connected with any tie rods or reinforcing bars.

It is possible to simplify the design by doing away with all fabricated steel and using ordinary reinforcing bars, thus making a very large reduction in the cost. It is also probable that both the concrete and reinforcement can be so disposed as to result in a considerable saving in the amount of each, without reducing the strength. A width of ten feet is more than necessary, but probably nine feet is about the minimum width that should be used.

I believe that our experience with this roadbed would be sufficient to convert any person who had been opposed to the canting of rails. It is unfortunate that this was not done on our experimental section. After a year's service, parts of certain rails are not much more than half converted, owing to the rail not being canted. Such batter as has taken place is much more pronounced on the inside of the rail.

One feature, the importance of which was realized when this section was built, has received added emphasis from our experience. This feature is the importance of having as close a contact as possible between the base of the rail and its support and of maintaining this close contact by keeping the bolts which fasten the rails to the roadbed tight. It is important to reduce both vertical and lateral movement of the rail to the lowest possible limits. Three-quarter inch bolts were used for this purpose, but they should be ⅞ in. or possibly 1 in. A small number of these bolts have failed by the heads snapping off. This is more apt to occur in cold weather. Nut locks were used under the boltheads to relieve the shock due to sudden lifting of the rail at points where the surface of the rail seat is a little lower than it should be, but these do not seem to accomplish their purpose fully. Nearly all of these failures were at the ends of the section where it joins the ordinary track construction, and were evidently due to the greater vertical motion of the rail at those points. The failures at other places were, in part, at least, due to defective bolts.

In conclusion, we feel that much has been accomplished by this experiment. The main point at issue,—that a rigid track is entirely feasible and results in no damage to the rail or rolling stock—has been proven. We have learned many things which will be of great value in making plans for another test section to be installed during the coming year. We firmly believe that before many years have passed a design will be developed that will be entirely satisfactory and at a cost that will, in the case of roads of heavy traffic, be justified by the savings that will ensue.

Doubtless a considerable saving will result on account of the reduction of train resistance, but it is our belief that a much larger saving will be made in the cost of maintaining track and equipment. Aside from expense incurred in correcting patent errors in design, such as the insulation and bolts referred to, there has been no expense for maintenance on this section.

No attempt has yet been made to determine the difference in tractive effort on this section and on ordinary track. The section is too short to make any conclusive investigation with a dynamometer car. Something might be done by measuring the retardation of drifting cars, but so many observations would be required to get conclusive data that it has not been attempted.

Time and further experiments will be required to develop the best design and to ascertain the economies that will result. It is the intention of the Pere Marquette to continue such experiments. If other railroads would do the same, it would reduce the time necessary to develop a thoroughly satisfactory design.

Confirmation of Esch Re-Appointment Opposed

WASHINGTON, D. C.

A VIGOROUS fight against confirmation of President Cooldige's re-appointment of Commissioner John J. Esch as a member of the Interstate Commerce Commission for another term has been organized by Senators from the "southern district" coal states, Virginia, West Virginia, Kentucky and Tennessee, who are opposing favorable action by the Senate on the appointment because of Commissioner Esch's vote in the lake cargo coal rate case. Commissioner Esch voted with a majority of the commission in the 1927 case in favor of a reduction of 20 cents a ton in the rates of lake cargo coal from the "northern" coal fields of Ohio and Pennsylvania without a corresponding reduction in rates from the southern district, although in 1925 he had voted with the majority of the commission as then constituted that held the rate relation not to be unreasonable.

The President's nomination of Mr. Esch for another term did not reach the Senate until just before the holiday recess and action was postponed by the committee on interstate commerce until January 5 at the request of Senator Wheeler. When the committee met on January 5 action was again postponed at the request of Senator Goff of West Virginia, who was absent, and Senator Schall of Minnesota. The President had meanwhile prevented a vacancy from existing in the membership of the commission by giving Mr. Esch a recess appointment.

The Senators from the southern coal district, under the leadership of Senator Sackett of Kentucky, have been planning a fight on Mr. Esch's confirmation for some time and are reinforced by the so-called "progressive" group of senators who have been opposed to Mr. Esch because of his part in the passage of the Transportation Act. It is understood that they have also gained some support from Democrats on general political principles although some of them are those who have been contending for some time for a better geographical distribution of commissioners and who are opposed to having two commissioners from one state.

It is understood that a great deal of lobbying against confirmation of the appointment has been done in Washington and elsewhere by representatives of the southern coal interests, while friends of Mr. Esch also have been very active in his behalf ever since it became known that there would be vigorous opposition to his nomination in the first place and to confirmation if the President nominated him.

The President on January 11 accepted the resignation of Commissioner Hall and appointed C. R. Porter, of Des Moines, Iowa, to succeed him.

THE ST. LOUIS-SAN FRANCISCO, in 1927, achieved the greatest yearly reduction in accidents to passengers, employees and persons at grade crossings in its history. The only increases in casualties were among licensees and trespassers, over which the railroad has no direct control.

St. Paul Reorganization Authorized

I. C. C. finds plan not perfect but prefers termination of receivership

WASHINGTON, D. C.

THE plan for the reorganization of the Chicago, Milwaukee & St. Paul by the termination of the receivership and the acquisition of the property of the old company by a new company, the Chicago, Milwaukee, St. Paul & Pacific Railroad, was approved in general in a report and order made public by the Interstate Commerce Commission on January 10. While declaring the plan defective "when regarded in the abstract and in the light of a possible ideal of sound financial theory" a majority of the commission declined to delay the termination of the receivership and declared that the plan "will preserve and maintain the unified system as it has been built up, which seems to be in the public interest." Four of the Commissioners, Eastman, Campbell, Lewis and McManamy, dissented and Commissioner Hall concurred with some reservations.

The commission approved the issue of securities by the new company, as proposed by the reorganization plan submitted by the reorganization managers, Kuhn, Loeb & Co., and the National City Company, with the exception that that part of the application requesting authority to issue general mortgage 5 per cent gold bonds, series D, was denied without prejudice to its renewal in a subsequent application.

Reports Also on St. Paul Investigation

At the same time the commission made public the report of its investigation of the affairs of the St. Paul undertaken on May 12, 1925, shortly after the receivership, which began March 18, 1925, declaring that the construction of the Puget Sound extension "was perhaps the chief of the causes which finally culminated in the receivership." The report also discusses other causes, however, and criticises both the directors of the company and its financial structure. Particular criticism is voiced as to the handling of the reorganization plan, which the commission says was not presented to it for approval of the security issues until so late that it must approve or reject the plan *in toto*. It is deemed desirable in the future, the report says, that, in each case of reorganization, application by the new company be made at an early stage for exercise of its authority to approve issuance of securities and that the plan be not declared operative until such approval has been had.

The commission declines to assent to the argument advanced by the applicant that issues as between the holders of different classes of securities are *res adjudicata* because the courts have passed upon them, but, as to the contentions of the Jameson committee, representing dissenting minority bondholders, it says that it has not been shown wherein those bondholders will be injured to any greater degree than the bondholders assenting to the plan nor wherein the public interest would be served by denial of the application, "even though we should believe that a stronger financial structure might have been erected by the adoption of some other plan of reorganization."

Attention is called to the belief expressed by the applicant that it will be unnecessary to form an underwriting syndicate and the order requires that the applicant shall not pay any underwriting commission in connection with the reorganization. The record is said to be insufficient to enable the commission to arrive at an opinion as to reasonableness of the reorganization expenses and jurisdiction of the proceeding is reversed for the purpose of further testimony on that point.

A certificate and order was issued by the commission authorizing specifically:

1. Acquisition and operation by the Chicago, Milwaukee, St. Paul & Pacific of the lines of railroad formerly owned and/or operated by the Chicago, Milwaukee & St. Paul.

2. Acquisition by the new company of control (a) of the Chicago, Terre Haute & Southeastern by purchase of capital stock and by lease, and (b) of the Chicago, Milwaukee & Gary and other subsidiary and terminal companies by purchase of all or fractions of their capital stock.

3. Issue by the new company of (a) 1,174,060 shares of common stock without nominal or par value, and $119,845,800 of preferred stock of $100 par value, and from time to time such additional amounts of stock up to 914,369 shares of common and $91,436,900 of preferred as necessary to convert the 5 per cent convertible adjustment-mortgage bonds into stock; (b) $106,395,096 of 50-year 5 per cent mortgage bonds, series A, B, or C; (c) $182,983,693 of 5 per cent convertible adjustment-mortgage bonds, series A, B, or C; and assumption by the new company of obligation and liability in respect of securities of the old company.

Extracts from the discussion of the issues involved in the case are as follows:

On behalf of the Jameson committee, which, according to the committee's petition to intervene, holds more than 17,000,000 of general and refunding bonds, it is alleged that the terms of the plan are unjust and not compatible with the public interest. At the hearing interveners produced only one witness, whose testimony was confined chiefly to the introduction of exhibits showing the range of market quotations of the securities involved in the reorganization, operating statistics, a comparison of the value of the equities of the bonds secured by the foreclosed mortgages, and a hypothetical distribution of the proceeds of the sale.

The applicant urges that the objections made to the plan were considered by the court in the course of the receivership proceedings. Therefore, as to the rights and equities between the holders of the respective classes of bonds and stock, such issues have been decided and are *res adjudicata* as between the parties. The decree is final, but article ninth thereof provides that the deeds authorized are not to be delivered until the applicant has been authorized by us to issue the securities provided to be issued under the plan or any modification thereof.

This proceeding is not a case to determine the rights of private parties. As the public interest is to control us in the determination of the application, the doctrine of *res adjudicata* is inapplicable. Nor can we accept the views advanced by the Jameson committee that we should extend to all portions of this application every provision of the several paragraphs and sections under which it was filed, solely because it was filed as a single application.

Rights of Stockholders

As to the contention that the plan is preferential to the stockholders and therefore prejudicial to the holders of the general and refunding bonds, counsel for the applicant stated that there had been deposited under the plan bonds and stock owned by approximately 40,000 security holders and about equally divided as between bonds and stock. Opposing the plan there are said to be about 50 bondholders owning approximately $17,000,000 of general and refunding bonds who say they will be injured if the application is granted. We are told that the deposits of the large percentages of the securities involved in the receivership were obtained by coercive measures and threats of penalties if deposits were not made promptly. None of the security holders assenting to the plan by the depositing of their securities has complained in this proceeding as to the means used in obtaining the deposits.

The bondholders depositing their bonds under the plan have, through their representatives, purchased the properties, and have, pursuant to provisions in the plan, previously agreed upon, apportioned to the stockholders a share of the bondholders' equity. They have thus permitted the stockholders to retain an interest in the properties. We have not been advised of any rule of law or equity which requires that the stockholders should be absolutely foreclosed and cut off, except to the extent of new money contributed by them, as has been

claimed by the Jameson committee, or which forbids bondholders from sharing with the old stockholders a portion of the equities purchased. The plan, which contains the provisions whereby the old stockholders are permitted to retain an interest in the new company was submitted to the District Court and approved by it. The applicant shows that the courts look with favor on the practice of permitting stockholders to retain an interest in reorganized properties, and especially in transportation systems where the conditions render such course lawful.

We find nothing indicating that such practice here is contrary to the public interest. We will also examine the amount of equity remaining after the issue of bonds, for the purpose of ascertaining whether the remainder will justify an issue of stock in the total par amount proposed.

Equity for Common Stock

In the instant case the testimony is that the value of the properties proposed to be acquired ranges from $640,000,000 to $900,000,000. For purposes of argument, the Jameson Committee took $700,000,000. The book value on May 31, 1927, in round numbers was $707,000,000. Against these values or this investment there will be outstanding after the proposed reorganization the following: Undistributed bonds, excluding $22,129,000 of bonds assumed pursuant to the lease of Terre Haute, $160,001,960; 50 year 5 per cent mortgage gold bonds, $106,395,096; adjustment-mortgage bonds, $182,873,693; preferred stock, $119,845,800; total $569,116,549. Using the lowest figure, $640,000,000, and deducting from that amount the total par value of the securities enumerated, or approximately $569,100,000, would leave $70,900,000 as representing the value of the 1,174,060 shares of common stock without nominal or par value. In the hypothetical balance sheet as of May 31, 1927, the applicant shows $174,342,842 for the book value of the common stock. Without expressing any opinion as to the value of the no par value common stock, it would appear that upon applying the test suggested there will remain an unmortgaged equity in the properties sufficient to permit the bondholders to assign to the stockholders an interest therein and to support the issue of stock in the amounts proposed.

Plan Criticized

That the plan, when regarded in the abstract and in the light of a possible ideal of sound financial theory is defective is manifest. While the absolutely fixed charges, default in payment of which means bankruptcy, have been brought within reasonably safe limits, even assuming that capital expenditures in the next few years are met by sales of the bonds provided therefor, the issue of adjustment bonds may prevent the company for a considerable time from obtaining new capital by the sale of other than fixed-charge obligations. Moreover, the possibility of accumulation of unpaid interest on the new adjustment bonds after 1930 may make still more remote the possibility of stock financing. Such accumulations can not nowadays readily be adjusted by additional capital issues as has been done at times in the past, and to that extent they may become a clog upon the property in the future. Securities of this sort are hybrid things and have no place in a thoroughly sound financial structure. Were we dealing here with a new enterprise at its inception, and were it a question of a capital structure to be provided for that enterprise, the bonds and stocks of which were to be sold to the public, it would probably be our duty to disallow the inclusion of such a security in that structure. We have, however, a different situation before us.

If the application is granted the receivership can be terminated and these properties returned, so to speak, to the security holders for management and operation. There will be no severing or dismemberment of any existing line. The plan will preserve and maintain the unified system as it has been built up, which seems to be in the public interest. Under the plan a financial structure will be erected which will eliminate the early maturities existing under the general and refunding mortgage and will substitute therefor maturities of 50 and 75 years, the latter embracing 80 per cent of the bonds foreclosed; which will bring the actual fixed interest charges safely within the net earnings applicable to interest; and which by the execution of a new mortgage subordinate in lien only to the liens of the mortgages securing the undisturbed bonds, will provide a means for refunding underlying bonds and for future financing. The fact that two of the proposed mortgages are to be closed mortgages should not interfer with such financing.

Delay Undesirable

The properties have been in receivership over two and one-half years, and, if the application is approved, will probably have been in receivership for three years or longer before the receivership could be terminated. If the application should be denied, the receivership may continue indefinitely. We do not and can not know how long a time would be required to procure assents to a new or modified plan, or whether or not as large percentages of the securities would be deposited. Another or modified plan might provoke equal opposition from any other group or groups of security holders. Upon consideration of all the facts we are of opinion that the public interest will be served by an approval of the application, even though we should believe that a stronger financial structure might have been erected by the adoption of some other plan of reorganization.

The plan provides that all of the preferred and common stock of the applicant which is to be issued to the stockholders assenting to the plan is to be deposited under a voting trust agreement which is to continue until January 1, 1930, and may be extended from time to time beyond that date by action of the holders of voting trust certificates representing a majority in number of the shares of preferred and common stock. The entire voting power of the capital stock of the applicant is to be vested in five trustees, to be designated by the reorganization managers, three to be approved by the bondholders' protective committee, one by the preferred stockholders' committee and one by the common stockholders' committee.

That as a general rule power to control corporation management should rest in owners of share capital rather than in those who occupy a position of creditor and that the owners of share capital should thereunder exercise this control periodically and at reasonably frequent intervals, is commonly regarded as a sound principle. In the instant case the proposals above recited, involving, as they do, compulsory alienation of complete voting power from shareholders for a period of two years only, after which shareholders may resume this power, may be regarded as not unreasonable in view of the facts.

The applicant has expressed the belief that it will be unnecessary to form an underwriting syndicate and to have underwritten the participation in the reorganization of any class of security holders. Our order will require that the applicant shall not pay any underwriting commission in connection with the reorganization.

General Mortgage Bonds

As to the authority sought to issue general mortgage 5 per cent gold bonds, series D, one of the objects to be achieved under a receivership is the rehabilitation of the properties by the making of needful expenditures for maintenance and for additions and betterments through applying to such purposes the income which ordinarily would be paid to bondholders for interest. For a new company acquiring the properties to capitalize, by the subsequent issue of bonds, any of the expenditures made for capital purposes during the receivership and before it took possession of the properties would negative the benefits derived from withholding interest from the bondholders and applying such funds to the purposes indicated. We are of opinion that under these circumstances the issue of general mortgage bonds ought not to be authorized except upon the express condition that the proceeds therefrom should only be expended for capital purposes that would not thereafter be used as a basis for further capitalization. As the applicant has stated that it has no present arrangements for the sale or pledge of the general-mortgage bonds, that part of the application will be denied without prejudice to the applicant's right to renew the request in a subsequent application.

Reorganization Expenses

Of the $4 a share assessment to be paid by the stockholders, $1.50 a share on the existing preferred and common stock is to be set aside for the compensation of the reorganization managers, various protective committees, and the fees of their counsel, depositaries, and expenses in connection therewith. Any balance remaining after such payments may, at the option of the reorganization managers, be paid to the applicant for additional working capital or returned to the holders of certificates of deposit for stock. . . .

The record is insufficient to enable us to arrive at an opinion as to the reasonableness of the expenses and the public interest affected thereby. Jurisdiction of this proceeding will be reserved for the purpose of taking further testimony as to the expenses of the reorganization, the nature and scope of the services performed for the compensation and fees claimed, and any other matters appropriate in the premises, and for the entering of pertinent orders in connection therewith. The authority herein granted to the applicant to issue its securities in accordance with the plan will be upon the express condition that the applicant shall impound in a separate fund the money received from the payment of $4 a share by the holders of pre-

ferred and common stock and shall not pay from such fund any amounts unless and until authorized by due order of court or by this commission.

Power Contracts

The State of Wisconsin, by special counsel representing its attorney general, has asked that we withhold our authority to issue the securities in the amounts contemplated by the plan until certain contracts entered into by the St. Paul for the purchase of electric power are either abrogated or reformed.

Under the interstate commerce act the management of railroads is charged with the responsibility of operating them in an honest, efficient, and economical manner. It has not been shown that the applicant will be operated otherwise.

Separate Opinions

Commissioner Hall, concurring, said he was in accord with the conclusions authorizing issuance and assumption of liability in respect of securities and granting certificate of public convenience and necessity but did not conceive that the commission had anything to do with the application which may be made of the four dollars per share paid in to the reorganization managers by existing stockholders. What those stockholders do with their money is their affair, he said, unless and until some part of that money is paid over to the applicant. He also expressed the opinion that applicant's request for authority to acquire control of various carriers through purchase of capital stock should remain in abeyance until the applicant has become a common carrier, without prejudice to renewal of the request thereafter.

A brief extract from the dissenting opinion by Commissioner Eastman follows:

Under the reorganization the capitalization of the St. Paul will in gross amount be substantially what it has been in the past. The difference will lie in the classes of securities and their antecedents. The funded debt secured by some sort of mortgage will also remain substantially unchanged in gross amount. The interest charges upon the new funded debt will amount to $22,807,174 yearly as compared with $21,544,066 upon the old funded debt, an increase of $1,263,108. However,—and this is the vital point relied upon in support of the plan—$9,143,685 of the new interest charges, those upon the so-called adjustment mortgage bonds, will not be fixed but will be payable each year only if earned. But beginning with 1930, only two years away, this $9,143,685 will become cumulative, and all unpaid interest must be paid in full before any dividends can be declared upon stock. Provision is also made for a new mortgage, junior only to the underlying mortgages upon which there has been no default, and under this new mortgage the funded debt can be increased without limit, except as a limit is imposed by the stockholders or this Commission. It is also provided that two-thirds of the net income after fixed charges, up to $7,500,000, may be diverted to capital expenditures, or a possible maximum diversion of $5,000,000 per year.

If anything is clear it is that under this financial structure, and unless earnings in the future average much better than the past gives reason to anticipate, it will be utterly impracticable for the new company to finance by new issues of stock, and that the financing of its future needs *must* be done by repeated issues of the new mortgage bonds or such of the old general mortgage bonds as are available, except to the extent that capital requirements are met by diversion from earnings at the expense of the adjustment bondholders.

The conclusion is inescapable that the sacrifice under the proposed reorganization plan is a sacrifice on the part of the holders of the defaulted bonds and that the stockholders, who were apparently wiped out by the foreclosure sale, are being restored to their original position with very little sacrifice.

In this connection it must be borne in mind that it is the stockholders, not the bondholders, who have been legally responsible for the management of the St. Paul in the past, and in so far as that management has been lax and has contributed to the financial downfall of the company, it is the stockholders who must shoulder the blame. If stockholders are to realize and be alive to their legal responsibilities, they should be made to carry at least their appropriate share of the load when their company meets with disaster. There surely can be no justification for restoring them, with small sacrifice on their part, to a position in the new company of practically unimpaired power and security . . . .

As I understand their position, the majority of the commission are not here authorizing the desired securities because they regard all of the provisions of the reorganization plan with favor. They choose approval of the plan as the lesser evil in the public interest. Such a conclusion, it seems to me, is ill-considered. This is not the first time that the commission has approved reorganization plans upon such a theory and in at least two instances there have been successive reorganizations of the same property. The need for a more positive policy is clearly indicated. The effect upon the country of a rejection of this plan would be tonic. Moreover, I believe that reasonable changes in the plan could and would be made without undue difficulty. But even if delay ensued, it would be no dire misfortune for the property to remain a little longer in receivership It has so far been much improved during the receivership, and doubtless this improvement would continue. . . .

I am authorized to say that Chairman Campbell and Commissioner McManamy join in this dissent.

Commissioner Lewis concluded his dissenting opinion with the statement:

Here was offered the opportunity to bring about a relationship between stocks and bonds, falling somewhere near a 50-50 ratio, or even 60 per cent bonds to 40 per cent stock.

All investigations indicate that the property and services have improved. Therefore, so far as the public interest is concerned there seems to be no pressing need for us to be spurred on to approval of the reorganization plan simply because if it is rejected, or changed, it will take some time to prepare and submit a new plan, and get the road out of receivership.

General Conclusions as Result of Investigation

The general conclusions expressed by the commission in its 50 page mimeograph report of the investigation are as follows:

The primary purpose of an investigation of this character is to ascertain and make known how and why the carrier failed in its appointed task. The ultimate purpose is to draw lessons from its experience whereby it may be determined what courses should be shunned by other carriers and what, if any, further public safeguards are necessary or desirable in this connection. With this purpose in mind we shall now proceed to consider the various topics which have been discussed in the report.

1. *The Puget Sound Extension.* The construction of this extension was, perhaps, the chief of the causes which finally culminated in the receivership of the St. Paul. So far as the future is concerned, however, the interstate commerce act has since 1920 contained, in paragraph (18), (19) and (20) of section 1, provisions designed to safeguard the country against ill-advised railroad construction. While these provisions are not a perfect safeguard, inasmuch as they are dependent upon the wisdom of this commission and its ability to obtain the necessary facts, they do ensure preliminary public consideration of a construction project and a much more careful examination into its merits than was had in the case of the Puget Sound extension.

2. *Financing and Earnings.* Against an impairment of the financial structure of a railroad company by a disproportionate issue of bonds with ill-arranged maturities such as occurred in the case of the St. Paul, provisions of the interstate commerce act now furnish a similar safeguard, so far as one can be provided by public regulation. These are the provisions of section 20a which require all railroad security issues to be approved and authorized by this commission. The same may be said of the policy which the St. Paul pursued in according certain New York bankers a monopoly of all of its financial operations. The problem involved in such a policy is one which we have recognized and which we are endeavoring to meet in the light of experience and careful observation by such steps as we may be persuaded will produce the results contemplated by the law. One step has already been taken in the requirement that issues of equipment trust certificates be sold

with the aid of competitive bidding. In our judgment the managing staff of a railroad should, wherever possible, include an officer with sufficient financial skill and experience to be able not only to guide the railroad in shaping its capital structure to the best advantage but also to represent it completely and effectively in its negotiations with bankers.

3. *The Board of Directors.* Under present conditions, especially when the stock of a railroad company is held, as it usually is, by a very large number of comparatively small holders, the tendency is clearly towards a self-perpetuating board of directors. Many of the men selected in this way have no substantial financial interest in the property which they are directing, and not infrequently they appear to have little appreciation of the great responsibility of their office and of the degree of trusteeship which they owe to the stockholders. This investigation has shown that many of the St. Paul directors knew comparatively little about the affairs of their company, that many of them did not even attend the meetings of the board with any regularity, and that some of them were affiliated with interests which conflicted in one way or another with the interests of the railroad company.

One phase of the problem thus presented has been met in some degree by the Clayton Anti-Trust Act, Section 19 which resulted, in the case of the St. Paul, in eliminating Ryan and Percy Rockefeller from the directorate.

The problem, however, extends considerably beyond this particular phase. It is akin to that presented by the election of public officials by the people and is of equal, and in some respects even greater, difficulty. Here the electorate is the body of stockholders. Can some means be found, better than those which now exist, of impressing upon the stockholders the importance of their duty, and also of supplying them with the information necessary to an intelligent judgment and with adequate opportunity to act upon such judgment? We confess that we have no definite answer to that question. Certain provisions in state laws which permit minority representation upon the boards seem desirable and worthy of general adoption. We are also inclined to believe that would be well if it were made a requirement that each stockholder of an operating carrier be furnished every year by the corporation with a printed statement setting forth succinctly the name and the business affiliations of each director whose election or re-election is proposed, and for whom stockholders' proxies will be voted, and the amount of stock owned by him. The matter is one which obviously requires a more thorough discussion than it has received in connection with this investigation.

The state of affairs shown by this record is unfortunately neither new nor rare. Inertia upon the part of stockholders and inattention and irresponsibility on the part of at least some directors, have usually attended railroad insolvencies in the past. Reliance is generally placed upon someone else; stockholders rely upon directors to choose managers; directors having chosen managers rely upon them and there the matter ends. Theoretically stockholders are supposed to check up their directors and directors are supposed to check up their managers. In the present case few or none such checks seem to have been applied. Stockholders seem to have been indifferent to their rights and directors to their duties. Whether this is a situation which can be remedied by legislation is doubtful. It is doubtful because men can not in general be compelled by law to exercise their rights, nor can they be forced by law to more than a narrow and technical compliance with their duties when those duties lie more in the domain of conscience than in that of prescribed or statutory actions. No machinery of a legal kind has yet been devised which will effectively control these things. The only force fully competent to influence them is that of public opinion. Improvement comes, if it comes at all, as a result of a more enlightened and sensitive public conscience tightening up ethical standards and quickening in men the sence of responsibility in the performance of trusteeship for other people.

The main value of a proceeding such as is here represented is that by bringing the facts of failure to public judgment in a concerete and definite way, the public conscience is, at least to some extent, aroused, and stimulated to a more exacting and effective control of business ethics. In this, rather than in attempts to reach the desired result by imposing of additional legislative rules and penalties, seems to lie the main hope of improvement.

Schedule of Participation in Distribution of New Securities by Holders of Existing Securities Participating in the Plan *

Existing securities Amount †	Description	Cash adjustment of interest from preceding interest date to Feb. 1, 1925 Per $1,000 bond	Total amount	New 50-year 5 per cent mortgage gold bonds Per cent	Amount	New 5 per cent adjustment mortgage bonds Per cent	Amount	New preferred stock Per cent	Amount	New common stock Per cent	Amount
$11,831,515	European loan bonds	$6.66 2/3	$78,877	20	$2,366,303	80	$9,465,212				
35,100,000	Four per cent bonds, due 1925	6.66 2/3	234,000	20	7,020,000	80	28,080,000				
49,980,800	Four and one-half per cent bonds, due 1932	7.50	374,856	20	9,996,160	80	39,984,640				
33,286,000	Four per cent bonds, due 1934	3.33 1/3	110,953	20	6,657,200	80	26,628,800				
26,175,000	C., M. & P. S. bonds	3.33 1/3	87,250	20	5,235,000	80	20,940,000				
43,089,000	Refunding bonds, series A	15.00	646,335	20	8,617,800	80	34,471,200				
29,129,800	Refunding bonds, series B	....	....	20	5,825,960	80	23,303,840				
$228,592,115	Total		1,532,271		45,718,423		182,873,692				
115,845,800	Preferred stock			24	27,802,992			100	$115,845,800		
117,406,000	Common stock			28	32,873,680					100	1,174,060 shares
233,251,800	Total				60,676,672						
$461,843,915	Grand total		1,532,271		106,395,095		182,873,692		115,845,800		1,174,060 shares

* Not including the notes of the railway company held by the United States Government or general claims against the railway company.

† Not including stocks and bonds in the so-called insurance fund of the railway company which are not outstanding and are to be canceled. Amounts of bonds are as found by the final decree of foreclosure and sale to be entitled to the security of the respective mortgages, except in the case of the European loan bonds. The European loan bonds are payable at the option of the holders, in French francs or English pounds sterling and are taken into the above table at the rate of exchange stipulated for conversion into 4 per cent bonds, due 1925. The final decree of foreclosure and sale shows $11,807,276.03 (instead of $11,831,515) of European loan bonds based upon rate of exchange of English pounds sterling on the date of maturity of the bonds.

Comparative Table Showing Capitalization and Interest Charges

(Giving effect to contingent interest and, beginning 1936, contingent sinking fund charges)
Figures as of June 30, 1927

	Before re-organization		Giving effect to re-organization			
	Capitalization	Interest charges	Capitalization	Fixed interest charges	Contingent interest charges	Contingent sinking-fund charges (Beginning 1936)
Undistributed bonds	$182,130,960	$8,343,734	$182,130,960	$8,343,734	.....	.....
Notes held by U. S. Government to be liquidated	55,000,000	3,300,000	.....	.....	.....	.....
Bonds to be exchanged	228,592,115	9,900,332	.....	.....	.....	.....
Fifty-year 5 per cent mortgage gold bonds	.....	.....	106,395,096	5,319,755		$225,000
Adjustment mortgage bonds	.....	.....	182,873,693	.....	$9,143,685	914,368
Preferred stock	115,845,800	.....	*118,845,800	.....	.....	.....
Common stock	117,406,000	.....	†117,406,000	.....	.....	.....
Total	698,974,875	21,544,066	707,651,549	13,663,489	9,143,685	1,139,368

* This amount includes $3,000,000 of preferred stock to be issued on account of $20,000,000 note held by the United States Government. It does not include the preferred stock to be applied in settlement of general claims against the railway company which is undetermined but which is estimated not to exceed $2,000,000.

† Making no par value common stock at $100 per share.

NOTE.—*Interest on the new bonds to be issued under the plan is to date from February 1, 1925. Holders of preferred stock are to pay $28 per share and holders of common $32, in return for which they are to receive $24 and $28, respectively, par value of the new 50-year 5 per cent mortgage bonds and one share of new stock of the class on which the assessment was paid.*

4. *The Effect of the Freight Rate Structure on the Situation.* The law with respect to the regulation of freight rates is, in our opinion, ample and adequate for the protection of both shippers and carriers. Whether the commission has administered that law wisely and justly others must decided. Our published reports contain the reasons for our decisions.

5. *Electrification.* The evidence indicates that the St. Paul entered into contracts with respect to the supply of electric power for portions of its lines which were not altogether wise and prudent. The decree of foreclosure gives to any purchaser the right to disavow within one year any contract, not fully performed, made or assumed by the St. Paul or any predecessor company. This right will inure in the new company. In our judgment the management of that company should give careful consideration to these contracts with a view to the modification of such features as may be deemed unsatisfactory.

6. *Acquisition of the Terre Haute and Gary.* The interstate commerce act now contains, in paragraph (2) of section 5, a safeguard against unwise and improvident acquisitions of control of one carrier by another, and this safeguard existed when control of these properties was acquired by the St. Paul. We have already commented upon this situation and have pointed out the lessons it teaches.

7. *The Receivership and the Reorganization.* Under this head we have a situation which is fundamentally unsatisfactory and requires reform. In the case of the St. Paul a plan of reorganization was prepared, was submitted to security holders, and after many months of negotiation approved by them; it was presented to the court having jurisdiction and approved by that court, and only after all these steps had been taken was it presented to us for approval of the securities proposed to be issued thereunder, according to the law. The effect was that we were confronted with two alternatives. The first was to approve *in toto* the securities proposed to be issued; the other, to reject them *in toto*, for in the name of the case for us to require any real modification of the plan in this respect would void all the agreements made between security-holders and compel the negotiation of new agreement with the likelihood of considerable additional delay and expense in taking the railroad out of receivership, and restoring it to control of those interested therein. It seemed to a majority of the commission that the first alternative better served the major public interest, despite the obvious shortcomings of the structure represented by the securities for which application was made. We should not, however, have been forced to make a choice of this sort. It is not our business to devise reorganization plans for insolvent carriers any more than it is our business to initiate financial structures for solvent carriers. These functions belong to management and not to regulation, and both the letter and the spirit of the law require that the distinction between regulation and management shall at all times be strictly observed. It is, however, our duty to see that securities issued by carriers conform to the requirements of the statute whether they are issued in the reorganization of an insolvent carrier or to provide necessary capital for a solvent carrier. Both the letter and the spirit of the statute require that securities issued shall as fully as may be possible in the circumstances of each case, conform to accepted principles of sound finance, so that railroad capital shall be obtained on terms as economical as prevailing conditions in the investment market will permit. This is the prime object of the law's provisions in section 20a.

It is therefore deemed desirable that hereafter in each case of reorganization application by the new company be made at an early stage for exercise of our authority under section 20a to approve issuance of the securities or assumption of the liability contemplated by the reorganization, and that the plan be not declared operative until such approval has been had.

James H. Wilkerson, federal judge at Chicago on January 11 issued an order directing the receivers of the Chicago, Milwaukee & St. Paul to execute and deliver the deed of transfer to the reorganized company. A second order was issued directing that all owners of securities of the old company who have not already deposited under the reorganization plan shall be debarred after February 15 from participating in the plan.

It is expected that final signing of the deed by the trustees will take place on January 14 and that following the delivery of the title the new officers, Harry E. Byram, chairman of the board and Harry A. Scandrett, president, will assume active charge of the railroad on January 16.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading during the year 1927 amounted to 51,714,320 cars. This cumulative total for 52 weeks represents a decrease of 1,384,499 cars from the year 1926 and an increase of 490,168 cars over 1925.

During the week ended December 31, in which the Christmas holiday occurred, revenue freight car loading amounted to 679,600 cars, a decrease of 54,681 cars from the total in the corresponding week of 1926 and of 21,461 cars from 1925. There was a small increase in loadings of grain and grain products but other commodity classifications showed decreases as compared to loadings in the last week of 1926. The loadings by districts were smaller in every instance.

Revenue freight car loading during the week ended December 24 amounted to 829,006 cars, an increase of 60,966 cars over the corresponding week of 1926, which included the Christmas holiday, and a decrease of 140,732 cars as compared with the same week in 1925. Loadings of grain and grain products, livestock, forest products, less-than-carload merchandise and miscellaneous freight were larger than in the corresponding week of 1926 and all districts, excepting the Allegheny, showed increases. The summary for the week ended December 31, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

WEEK ENDED SATURDAY, DECEMBER 31, 1927

Districts	1927	1926	1925
Eastern	157,823	169,139	162,528
Allegheny	139,562	159,858	147,595
Pocahontas	33,643	41,155	31,429
Southern	102,007	107,633	106,883
Northwestern	82,994	84,195	80,579
Central Western	104,353	112,639	109,218
Southwestern	59,218	59,662	62,829
Total Western Districts	246,565	256,496	252,626
Total All Roads	679,600	734,281	701,061
Commodities			
Grain and grain products	35,956	35,213	33,351
Live stock	22,148	23,762	22,697
Coal	141,293	171,148	122,380
Coke	9,371	11,132	14,702
Forest products	34,905	38,037	45,853
Ore	6,459	9,345	10,206
Merchandise L.C.L.	192,168	198,308	200,608
Miscellaneous	237,300	247,336	251,264
December 31	679,600	734,281	701,061
December 24	829,006	768,040	969,738
December 17	868,162	944,396	1,008,696
December 10	877,600	992,455	1,020,839
December 3	918,237	1,051,219	923,206
Cumulative total, 52 weeks	51,714,320	53,098,819	51,224,152

The freight car surplus for the period ended December 23 averaged 406,694 cars, as compared with 388,156 cars December 15. The total included 190,693 box cars, 167,596 coal cars, 22,507 stock cars, and 12,491 refrigerator cars.

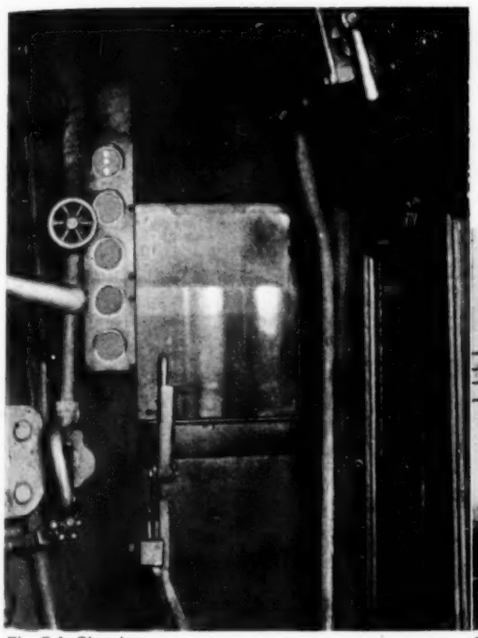
Car Loading Canada

Revenue car loadings at stations in Canada for the week ended December 31 totalled 49,307 cars, showing a seasonal decline of 15,608 cars from the previous week and an increase of 817 cars over the same week last year.

Commodities	Total for Canada			Cumulative totals to date	
	Dec. 31, 1927	Dec. 24, 1927	Jan. 1, 1927	1927	1926
Grain & grain products	8,434	14,456	10,158	528,149	513,541
Live stock	913	1,520	1,374	123,314	117,933
Coal	7,826	9,490	5,826	376,319	334,454
Coke	504	588	419	19,770	20,076
Lumber	1,821	2,478	1,957	188,242	184,731
Pulpwood	2,855	2,572	2,444	145,949	128,529
Pulp and paper	1,920	2,298	1,482	115,764	121,707
Other forest products	2,023	2,669	1,988	156,999	157,769
Ore	1,259	1,460	1,299	88,305	90,062
Merchandise, L.C.L.	13,085	16,739	12,399	891,807	852,208
Miscellaneous	8,667	10,645	9,144	764,395	737,705
Total cars loaded	49,307	64,915	48,490	3,399,013	3,258,715
Total cars received from connections	30,539	32,682	30,074	1,922,822	1,935,715

Pennsylvania Installs Code System of Train Stop with Signaling

Four-indication cab signals, power immune from foreign current and position-light signals included in installation on 1492 track miles



The Cab Signal

The Position Light Wayside Signal

IN compliance with the orders of the Interstate Commerce Commission the Pennsylvania has installed automatic train stop on five divisions, totaling 611.5 road miles and 1,492 track miles, with 1,159 locomotives equipped, as shown in detail in Table I. All of these installations include modern alternating current automatic block signaling, using position-light signals. On the four divisions placed in service during 1927, the new code system of train stop is used, in which the four indications of the cab signal are secured by a novel system of coded current, transmitted through the rails to an approaching locomotive. The wayside signal and train stop equipment, as well as that on the locomotives, was furnished by the Union Switch & Signal Company.

Train Control Development on the Pennsylvania

Soon after the commission issued the first train control order in 1922, the Pennsylvania, for the purpose of test and development, made an installation of the Union three-speed continuous train control on 45 miles of its Sunbury division with 12 locomotives equipped. The continuously controlled cab signal used on this installation and forming an integral part of the continuous system, was a new development of considerable importance and utility. Having secured the desired results, this installation was dismantled in 1926.

In the meantime the commission had announced, in July, 1924, that the permissive or forestalling feature could be used with the simple train stop, which does not include the speed controller. The Pennsylvania, therefore, decided to install the continuous system with the permissive feature in the belief that the cab signal, which it includes, was of great benefit in giving advance and continuous accurate information to the engineman, irrespective of weather conditions.

Before starting on the installation of train stop on the territories specified by the commission, the Pennsylvania decided that modern a-c. automatic block signaling, using position-light signals, should be provided as the basis for the wayside apparatus. In order to eliminate the possibility of interference in the operation of the signal system, as well as of the train control system, from 60 to 25-cycle commercial or power circuits, it was decided to use 100-cycle power for the wayside apparatus.

Table I—Train Stop Installations on the Pennsylvania

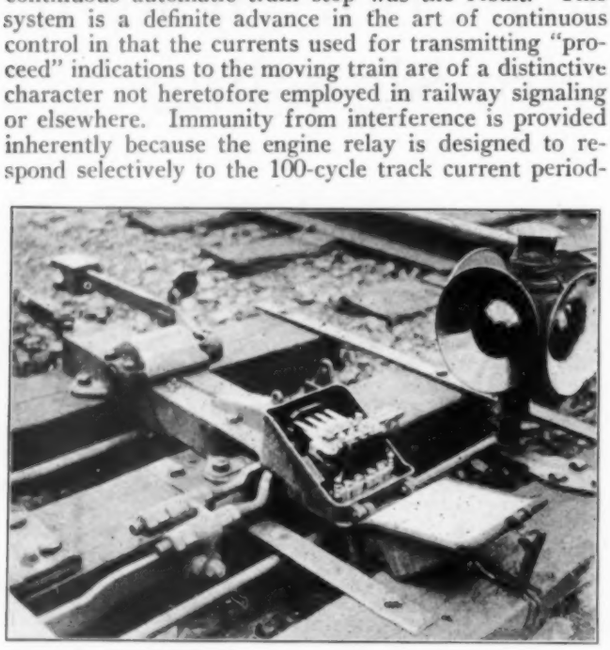
ROAD	FROM	TO	Miles of Road	Miles of Track	Locomotives Equipped
Pennsylvania	Baltimore, Md.	Harrisburg, Pa.	81.5	163	152
Pennsylvania	Harrisburg, Pa.	Altoona, Pa.	130.4	490.2	443
W. J. & S.	Camden, N. J.	Atlantic City, N.J.	56.2	112.4	136
P.C.C.&St.L.	Columbus, Ohio	Indianapolis, Ind.	187.0	351.5	122
P.C.C.&St.L.	Pittsburgh, Pa.	Newark, Ohio	156.4	374.7	306
			611.5	1,491.8	1,159

The first installation of this signaling with train stop was placed in service between Baltimore, Md., and Harrisburg, Pa., on July 17, 1926. At the time this installation was planned, the continuous train stop was chosen as the most highly developed system then available to meet the requirements, and three-indication cab signals were provided by means of track and loop circuits. In order to standardize the engine equipment, this installation is now being changed over to the new code system installed later on the other divisions.

Code System Brought Out in 1926

Developments were being made with the purpose of producing a system that would not only be universally applicable to railroads of both steam and d-c. or a-c. electric propulsion but would also provide a continuous

cab signal with four indications. The code system of continuous automatic train stop was the result. This system is a definite advance in the art of continuous control in that the currents used for transmitting "proceed" indications to the moving train are of a distinctive character not heretofore employed in railway signaling or elsewhere. Immunity from interference is provided inherently because the engine relay is designed to respond selectively to the 100-cycle track current periodically interrupted at the code frequencies and to this character of current only. The equipment provides means for applying the brakes automatically after a more restrictive cab indication is given; means have also been provided for preventing such brake application, as well as for releasing the brakes after an automatic train stop application. This code system was installed first on the West Jersey & Sea Shore division of the Pennsylvania, where it was completed on March 20, 1927.



Hand Operated Switch Mechanism with Controller Open

Features of Wayside Equipment

The wayside equipment is designed to operate on 100-cycle alternating current. Where a-c. power supply systems for the signaling were not already in service, a complete new a-c. distribution system was provided. Power is purchased at 60-cycle and converted to 6,600-volts, 100-cycle, single-phase, for distribution to the wayside locations. Automatic switching equipment is provided at each sub-station, which will operate in case of a power failure, to cut the feed through from a live station. Therefore, under average conditions, interruptions of commercial power supply will not affect the operation of the signal and train stop system.

The master relay on the locomotive is controlled by energy from the track circuit in which a code transmitter is connected across the rails at the exit end of the block. The code transmitter consists of two sets of three cam-operated circuit controllers (but one transmitter is required for two track circuits fed from the same location), the cams of which are driven through gears by a small induction motor. This motor runs at a constant speed and operates the cams and the contacts controlled by them at a constant predetermined speed. Whenever a train is in the block, the track relay opens, which starts the code transmitter, and the track current is then interrupted by means of the code transmitter, the prescribed number of times per minute, depending upon the conditions of the track in advance. This coded current, in turn, is transmitted to the master relay on the locomotive, which selectively energizes the proper decoding relays and, through a series of contacts, controls the cab signal indications. The codes used in this system display signals as follows:

Indication	Interruptions of 100-Cycle Current
Clear	180 per minute
Approach restricting	120 per minute
Approach	80 per minute
Caution—Slow speed	Steady current, or absence of current

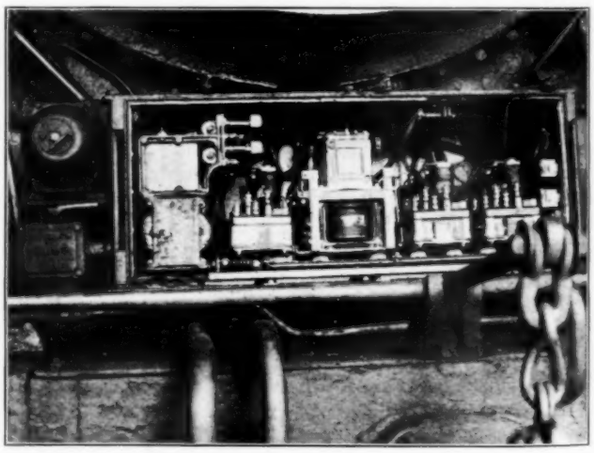
Engine Equipment

Receiving coils are mounted on the locomotive just ahead of the leading pair of wheels, and so located as to have a clearance of from 5 in. to 8 in. above the rail, and provide the means of receiving alternating current energy from the rails for energizing the train stop equipment, thus controlling its functions. An equipment box, mounted at the front of the locomotive, houses all of the electrical equipment required for the control and operation of the cab signal and the air brakes.

Cab signals of the position-light type are located within the cab on the engineman's side and also on the fireman's side and each displays four indications. An acknowledgment switch, by which automatic train stop brake applications may be forestalled, is located in the cab on the right side and convenient for the engineman to operate.

A reset switch, with which the electrical equipment may be reset to permit the release of brakes after an automatic train stop application of the brakes, is located beneath the right side of the cab so that it may be operated from the ground, after the locomotive has stopped.

A timing valve with a warning whistle is located on the right side of the locomotive ahead of the cab. A new brake valve known as the Type-HS2 replaces the standard brake valve. This valve has incorporated in it all of the standard air brake features, as well as the special features required by the automatic control of the brakes.



Instrument Case on Front of Locomotive

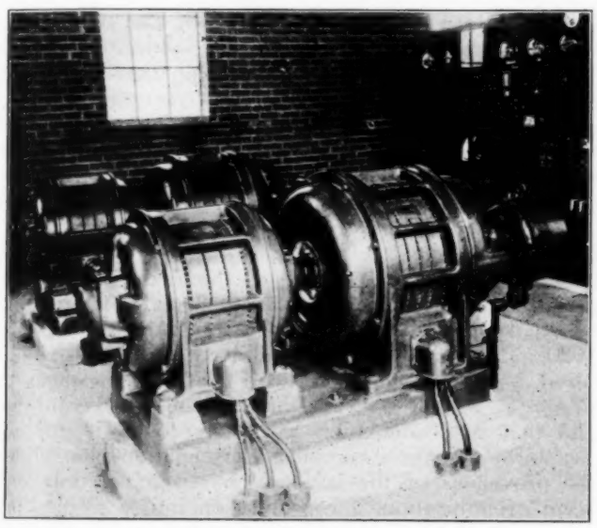
General Description of Operation

The principle of induction is used in transmitting the energy from the rails to the locomotive equipment. The receiver consists of a laminated iron core on which are mounted coil windings. The action between the rails and the receiver may be thought of as a transformer, in which the rails act as the primary and the coil windings as the secondary. The energy induced in the re-

ceiver is amplified and then passed through the master transformer to operate the master relay. The current for the cab signal lights, amplifying circuits and relays is taken from the headlight generator at 32 volts.

A brake application caused by the train stop equipment will result in about 35 lb. brake pipe reduction on locomotives when using 110 lb. brake pipe pressure, which is the usual pressure in passenger service, and about 22 lb. brake pipe reduction when using 70 lb. brake pipe pressure, which is the usual pressure in freight service. The automatic equipment makes only a service brake application. The engineman retains manual control over the brakes at all times, except that brakes cannot be released from the cab in case an automatic train stop application has been caused by failure to acknowledge a change to a more restrictive signal indication.

The indication of the cab signal is continuously determined by conditions in advance of the train. Any



Frequency Changer Sets and Automatic Substation, Piqua, Ohio

change in conditions occurring at any time in a clear block which calls for a reduction in speed, immediately operates to initiate an application of the brakes unless the change of cab indication is acknowledged by the engineman, who thereby indicates his alertness and ability to handle his train. Conversely, if after a restrictive cab indication is received, conditions ahead of the train change in such a way as to make a higher speed permissible, the change is immediately and visually indicated in the cab and this information can be utilized at once for accelerating the train.

Wayside Control

The control of the signals, as well as the engine equipment, is based on the track circuit. The wayside circuits, as applied to double or multiple track where trains are operated normally in one direction only, are designed to control train operation in the following manner:

If it is assumed that a train is entering the first block of a series of four, the fourth one of which is occupied, the shunting of the rails of the block entered starts the code transmitter for that block and so affects the control circuits connected therewith that a "clear" code is fed to the rails from the far end of the block. This "code" is picked up by the engine equipment and translated into a "clear" cab signal. As the train progresses and enters the second block, the fourth block still being occupied, the "approach restricting" code will be fed to the rails over which the engine passes, thereby transmitting an "approach restricting" indication to the cab signal and initiating an automatic brake application unless the engineman acknowledges. As still further progress is made by the train, and block three is entered, an "approach" code is fed to the rails, resulting in an "approach" indication on the cab signal, again requiring an acknowledgment to avoid an automatic brake application. If the train should enter block four, which is still assumed to be occupied, no coded signaling current would reach the engine; therefore, a "caution-slow speed" would be displayed by the cab signal and an automatic brake application result, unless acknowledged. An automatic brake application is always initiated whenever a more restrictive indication is received unless the engineman acknowledges this transition into a more restrictive zone.

When signals are so spaced as to justify, the "approach restricting" indication is omitted. As the entrance of an engine into a track section starts the code transmitter, so the leaving of the train restores the track circuit and stops the code transmitter.

Locomotive Circuits and Pneumatic Equipment

The presence or absence of a coded current in the rails ahead of the locomotive and also the frequency of the code when current is flowing, determine the indication displayed by the cab signal in the engine. Tracing a "code" signal through this system, it passes through the following steps:

The periodically interrupted code current induces an e. m. f. of like nature in the pair of receiver coils supported on an iron core ahead of the pilot wheels of the engine. The energy induced in the receiver coils is amplified to a value large enough to operate the master relay at the code frequency of 180, 120 or 80 operations per minute. Uninterrupted or uncoded 100-cycle current or currents of other than 100-cycle frequency cannot cause regular operation of the master relay. Regular operation of the master relay at any one of the predetermined code speeds will selectively energize the train-carried relay, which illuminates the cab indicator light to give the signal indication determined by the conditions in advance.

The engine equipment includes an engineman's brake valve which has incorporated in it all of the features of the standard air brake equipment. Operation of this brake valve by the engineman is exactly the same as that of the standard engineman's brake valve now in general use.

Incorporated in the design of the HS2 brake valve is a portion which is controlled automatically and which, when operated, makes a brake pipe reduction in the same manner as that made by the engineman in his manual operation of his brake valve, except that the equalizing reservoir reduction is made into a reduction limiting reservoir. By this means, the automatic reduction is limited to a full service when desired. Provision is made, however, for the condition in which the engineman may be totally incapacitated when the automatic application is received. In this case, the automatic reduction is not limited and the brake pipe pressure is reduced to zero.

The automatic portion of the engineman's brake valve is controlled by a timing valve, the purpose of which is to provide an interval of approximately six seconds, during which the engineman is expected to acknowledge a restrictive change of indication. A failure to ac-

knowledge the change of indication within this interval is penalized by an automatic brake application which cannot be released until the train has been brought to a stop and the engineman or the fireman has dismounted and operated the reset cock. During this time interval a warning whistle is sounded in the cab. The timing valve is operated by a magnet which is energized over contacts on the engine-carried relays which, in turn, are energized selectively by the amplifying equipment.

Emergency Application

Incorporated also in the engineman's brake valve is an automatic portion which, when operated, prevents the engineman from recharging the train line and thereby releasing the automatic brake application. At any time, however, the engineman can make an emergency brake application by the manual operation of his brake valve, or can add to the brake pipe reduction made by the automatic equipment.

Incorporated also in the engineman's brake valve is a cut-out cock which is normally sealed in the open position. If a complete failure of the wayside or engine equipment makes it impossible for the engineman to release his brakes and proceed into the terminal, the seal on the cut-out cock can be broken, the cut-out cock reversed, and the automatic portion will be restored to its normal position, whereby the brakes can be released and the train allowed to proceed.

100-Cycle Power Distributing System

The power distribution system and automatic switching equipment on the train stop territory from Columbus, Ohio, to Indianapolis, Ind., is typical.

A new pole line was constructed for the signal control and power supply line circuits. Class-A chestnut and cedar poles, butt treated with creosote were used. The poles are about 30 ft. long and set 150 ft. apart. Steel cored, stranded aluminum cable, the equivalent of No. 2 copper, is used for each of the two conductors for the 6,600-volt, 100-cycle, single-phase, power distribution circuit run on porcelain insulators on the top arm. The line control circuits are No. 10 bare copper-weld wire on glass insulators.

The power distribution system includes sub-stations equipped with automatic switching devices. In case of an outage of the commercial power supply to one substation the signal distribution line load is immediately switched automatically to the supply at the next substation.

Alternating-current signal power is supplied by motor-generator sets. A set consists of a three-phase 60-cycle induction motor driving a single-phase, 100-cycle generator and a direct-connected exciter. The set is started by the automatic compensator when the starting switch is closed. As long as that switch is closed and is available the set runs. If the a-c. power supply fails and this switch is closed the set restarts when the a-c. power is restored.

Hand-Operated Switch Mechanism

On the divisions equipped with train stop all hand-operated main line switches are equipped with the new Union hand-operated switch mechanism. This device provides means for operating and locking a switch by one operation of a hand-throw lever and a circuit controller is operated by the lock rod to shunt the track circuit or to control line circuits. The movement is adaptable for use in operating a single switch, a switch and derail, switches of crossovers between main tracks and crossovers between a main track and a siding.

Railway Unification Legislation Urged

MODIFICATION of the provisions of the transportation act relating to railway consolidation is "imperative if anything is to be done with it," except to the limited extent to which the law now authorizes acquisitions of control short of consolidation, Commissioner H. C. Hall of the Interstate Commerce Commission testified on January 9 at a hearing before the Senate committee on interstate commerce. He added that members of the commission believe that unification of carriers should be permitted but not required and that the Fess-Parker bill, with modifications suggested in a series of amendments drafted by the law committee of the Association of Railway Executives, represents to his mind the most desirable and workable modification of existing law that has been forthcoming as the result of the study of the subject for several years.

Commissioner Hall began by saying that as he had appeared before Senate and House committees on the subject so repeatedly, almost every year since 1922, he thought his views and those of the commission must be so well known that it was hardly necessary to repeat them, but Chairman Watson of the committee suggested that he go over them "for the benefit of the new members of the committee" and Senator Fess asked him to explain just why the commission thinks the present law needs modification. Mr. Hall said that the commission has had the subject under active consideration since 1920 and that the need for modification has been recognized for several years in the President's messages to Congress, as well as in the introduction of several bills, and that the commission had early found it impracticable to prepare a complete consolidation plan under the provisions of the law, which recognizes only one form of unification, a consolidation into a single corporation for both ownership and operation.

The only provision of the existing law found available so far, Mr. Hall said, is that in paragraph 2 of section 5, which permits acquisition of control under certain conditions short of actual consolidation. The other sections provide for consolidation only after the commission has put out a complete plan and it also contemplates only one of the various forms of aggregation that historically have been used in building up the large railroad systems that we have today. He also said that although the intent of Congress was plainly to remove obstacles to railway consolidation, the law as passed unwittingly interposed new obstacles, one of which is that progress is arrested until the commission has prepared a complete plan and another the requirement that the commission determine the values of the properties proposed to be included in a system as a limit upon the proposed capitalization.

"The valuation statute as thus far construed," he said, "provides for the ascertainment of value for rate-making purposes, which may be a very different thing from a valuation for other purposes, such as to fix the amount of allowable capitalization. None of us knows certainly what the valuation act requires. It is still before the courts and in two or three instances we have had no light from the courts because the Supreme Court found that valuations have not yet reached a stage where they are justiciable. The O'Fallon case, involving valuation for recapture purposes, is now on its way to the Supreme Court. The provisions of the present

law would require us to arrive at present value and many railroads have non-carrier property which must be taken into consideration for consolidation purposes. That question was one such as to arrest progress, toward consolidation for several years, but this bill eliminates that problem.

"Also there is lack of provision for federal machinery in the corporate operation of carriers to bring about the further unification which it was plainly the purpose of the law to bring about. It seemed desirable to the carriers that there should be some enabling act to enable a carrier to carry out the intent of Congress in spite of state constitutional and statutory prohibitions."

Mr. Hall said he saw no occasion for the provision in the bill that nothing therein shall be construed as creating federal corporations. Senator Fess, and Alfred P. Thom, general counsel of the Association of Railway Executives, said it had been inserted at the request of some of the state authorities, although regarded as unnecessary.

Mr. Hall also said he did not think the law should make the commission a medium for adjusting controversies between individual security holders involving private rights, except as they affected the fairness of a plan in general, and that such controversies should not be allowed to delay a unification.

Before Mr. Hall began his testimony Mr. Thom distributed among the committee members a print of the Fess bill with modifications proposed by the law committee of the association. Mr. Thom said that after the Parker bill had been reintroduced at the end of the last session, with some committee changes, Chairman Parker of the House Committee had asked the various interested parties to study the bill during the recess and that the law committee had appointed a drafting committee consisting of R. S. Lovett, chairman of the board of the Union Pacific; S. T. Bledsoe, vice-president and general counsel of the Atchison, Topeka & Santa Fe; R. J. Cary, vice-president and general counsel of the New York Central; J. P. Blair, general counsel of the Southern Pacific, and himself. This committee had drawn up the suggested amendments which had been approved with slight modifications by the law committee, and copies had been furnished to the commission, the National Industrial Traffic League, the American Short Line Railroad Association, and others. It was this print which Mr. Hall used as the basis for his comments on the bill, although he said they were nearly all details and that the bill as a whole with the suggested changes was the best he had seen to meet the existing situation.

Permissive or Compulsory?

The question as to whether railway consolidation legislation should be permissive or compulsory was discussed when Mr. Hall resumed his testimony on January 10. Mr. Hall said that somebody ought to have the power to decide in what system or group a railroad should be placed in the public interest and Chairman Watson of the committee asked if a road could be compelled to enter a group if its stockholders refused to sell.

Mr. Hall said he thought it doubtful if such a law would be constitutional. Mr. Thom expressed the opinion that it would be competent and constitutional for Congress to confer upon a railroad power to condemn the stock of a company that declined to enter a combination found by the commission to be in the public interest.

Chairman Watson said the question is sure to be raised as to whether such power should not be conferred if a plan of unification is to be adopted and that personally he was inclined to think that Congress ought to do anything in its power to bring about unification.

Mr. Hall replied that the purpose of the bill is to remove obstacles that should suffice and that the need for compulsion has not yet developed, whereas the need has been developed for such a bill as is proposed He pointed out that under its provisions the commission would report to Congress as to the progress made after a period of years and that it would then be time to consider whether the element of compulsion was necessary.

Mr. Hall questioned the need for the provision directing the commission to make a special study of the short or weak lines, saying the commission had been studying all kinds of lines for 40 years. Mr. Thom said the provision had been suggested as a concession to the short and weak lines.

Hearing Before House Committee

Commissioner Hall on January 6 completed his statement before the House Committee begun at the last session of Congress and continued before the holidays. He expressed general approval of a draft proposed by the law committee of section 202 of the bill, known as the "policy section," which attempts to lay down some legislative standards for the guidance of the commission, but suggested that it might be made more specific in some instances. The section as suggested reads:

"The unification through any method of procedure provided for in this title, of carriers or property of carriers, is hereby authorized, and the commission shall carry out the provisions of this title in such manner as in its opinion will protect the public interest, preserve necessary weak or short lines, prevent any undue lessening of existing carrier competition in service in cases where such competition is deemed by it essential to the public interest, and bring about ultimately the establishment of a number of strong, efficient and well balanced systems, calculated to facilitate simplified and more effective regulation, to promote economy, to afford better service, to maintain as far as practicable the existing routes and channels of trade and commerce, to eliminate unnecessary duplications and wasteful competition, and to provide the advantages of competition between the systems so established."

Mr. Hall said that additional points or standards might be inserted, providing the language does not exclude any element of public interest, and he suggested the possible addition of the words "or otherwise in the public interest."

Existing Routes

Representative Hoch said the committee had omitted from its draft the requirement that existing routes should be maintained and asked Mr. Hall if he considered this essential. He said that he did not attach so much importance to it as some of the commissioners and many shippers. He said there are many existing routes that represent wasteful competition and that he thought it more important to the shipper to have the best possible routes and to set up strong competing systems than to preserve all the many existing routes. However, new systems created under the new law should not be handicapped by requirements that do not apply to systems that have been built up in the past.

The hearings before the House Committee were adjourned without definite date so as to avoid conflict with the hearings before the Senate committee.

Locomotive Derailed by a Broken Main Rod While Running at an Estimated Speed of from 35 to 40 m.p.h.

Annual Report of the Bureau of Locomotive Inspection

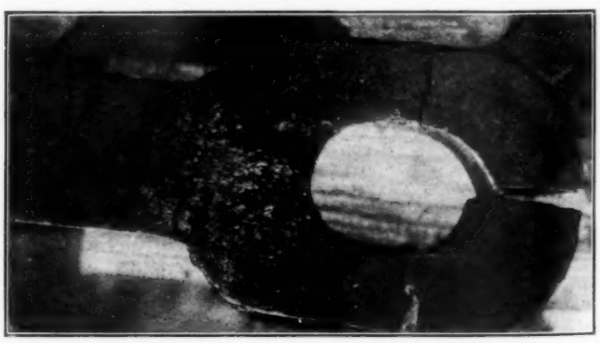
Nine per cent decrease in number of defective locomotives —Accidents show decrease of 14.9 per cent

THE sixteenth annual report for the fiscal year ending June 30, 1927 of A. G. Pack, chief inspector of the Bureau of Locomotive Inspection to the Interstate Commerce Commission, highly commends those railroads who have applied low water alarms to

Front Footboards on a Switch Engine Which Caught on a Crossover Track, Resulting in Serious Injury to an Employee

locomotives for the contribution they have made to safety. As in previous reports, Mr. Pack has renewed his recommendations that the application of power grate shakers, horizontal hand holds, stirrups on cabs, and water columns with a water glass and gage cocks attached, and an additional water glass located on the left side of the boiler backhead, be made a requirement of the rules.

He has again stressed the need for giving closer attention to defects, the repairs of which are frequently considered unimportant. During the fiscal year ending June 30, 1927, 31 per cent of the locomotives inspected were found with defects or errors in inspection that should have been corrected before being placed in service. This, however, is a decrease of nine per cent from 1926 and is the best record that has been attained by the railroads since 1923. The percentage of locomotives inspected and found defective was 40 per cent in 1926, 46 in 1925, 53 in 1924 and 65 in 1923. This report also showed the lowest number of locomotives ordered out of service since 1923; a total of 2,539 being



Laminated Drawbar Which Had Been Overheated and Had Apparently Been Cracked Through the End of the Eye for Some Time—Drawbar and Pin Were Overdue for Inspection

ordered out in 1927 as compared with 3,281 in 1926 and 7,075 in 1923. The report shows a decrease of 14.9 per cent in the number of accidents as compared with the previous year and a decrease in the number of injuries during the year of 21.6 per cent, but there

is an increase of 27.3 per cent in the number of persons killed. The decrease in the total number of accidents reflects in a large measure the results of the substantial decrease in the percentage of locomotives found defective by the federal inspectors.

Defective squirt hoses were the cause of the greatest number of accidents during the year covered by the report. The 33 accidents reported as due to this cause, however, show a considerable improvement over the number of accidents accountable to the same defect in the report made in 1926, which was 51. Thirty accidents were due to defective reversing gears, 29 to defective grate shakers, 25 to defective brakes and brake rigging, 23 to defective flues and 22 to defective valve gears, eccentrics and rods. Nineteen accidents were due to crown sheet failures caused by low water and 12 accidents were due to defective water glasses and

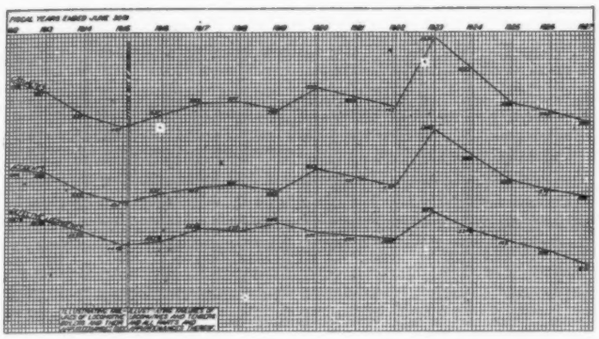


Chart Showing the Relation of Defective Locomotives to Accidents and Casualties Resulting from Locomotive Failures

water glass fittings. Fifteen accidents were also caused by defective couplers.

The following is an abstract of Mr. Pack's report.

The Chief Inspector's Report

Boiler explosions caused by crown-sheet failures continue to be the most prolific source of serious and fatal accidents with which we have to deal, 60.7 per cent of the fatalities during the year being attributed to this cause.

There was a decrease of 48.7 per cent in the number of crown-sheet failures, but the average number of fatalities per accident increased, resulting in the same number of fatalities from this cause as occurred in the previous year. The fatalities per accident may be expected to increase with the increasing size of locomotives and the higher pressure carried in the boilers of modern locomotives. Our investigations indicate that material reduction in this class of accident and resulting casualties can be accomplished only by proper location and maintenance of water-level indicating appliances that will accurately register the water level in the boiler under all conditions of service, the use of the safest practicable fire box construction, especially within the area which may be exposed to overheating due to low water, and the application of a device that will give an audible alarm when the water level approaches the danger point.

In my fifteenth annual report attention was called to the danger resulting from the use of reduced body stay bolts having telltale holes which do not extend into the reduced section at least 5/8 in. Failure of this type of bolt usually occurs at or close to the fillet joining the body of the bolt and the enlarged ends. Telltale holes which do not extend into the bolts to or beyond the usual point of breakage can not perform the function for which they are intended and mislead inspectors who depend upon the telltale holes as a check of the results of the hammer test.

Derailments and Casualties caused by Defects in or Failure of some Part of the Locomotive or Tender

	Year ended June 30				
	1927	1926	1925	1924	1923
Number of derailments[1]	15	23	22	30	38
Number of persons killed	1	2	..	3	4
Number of persons injured	23	49	52	112	157

[1] Only derailments reported by carriers as being caused by defect in or failure of parts of the locomotive or tender were investigated or counted.

Reduced Body Staybolts

When applying reduced body stay bolts, great care should be exercised to see that the bolts are of proper length so that the threads on the bolts engage the threads in the sheets for the full thickness of the sheets. If the bolts are too long, a full bearing for the threads is not obtained in each sheet and part of the bolt will blow out when breakage occurs, usually with fatal results.

One hundred and forty-six applications were filed

Accidents and Casualties Caused by Failure of Some Part of the Locomotive, Including the Boiler or Tender

	Year ended June 30				
	1927	1926	1925	1924	1923
Number of accidents	488	574	690	1,005	1,348
Per cent increase or decrease from previous year	14.9	16.8	31.3	25.5	[1]17
Number of persons killed	28	22	20	66	72
Per cent increase or decrease from previous year	[1]27.3	[1]10	69.7	8.3	[1]18
Number of persons injured	517	660	764	1,157	1,560
Per cent increase or decrease from previous year	21.6	13.6	33.9	25	[1]20

[1] Increase.

Persons Killed and Injured Classified According to Occupation

	1927		1926		1925		1924		1923	
	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured
Members of train crews:										
Enginemen	8	181	5	210	8	230	19	330	19	484
Firemen	9	179	6	230	6	300	22	434	16	597
Brakemen	4	51	3	77	2	84	9	102	12	137
Conductors	....	25	2	28	....	25	2	39	1	35
Switchmen	1	13	....	19	....	23	1	29	2	32
Enginehouse and shop employees:										
Boiler makers	....	11	....	5	....	6	1	24	3	19
Machinists	1	5	....	5	....	13	1	9	2	14
Foremen	....	1	....	3	....	....	1	6	1	6
Inspectors	....	....	....	....	....	2	1	3	....	2
Watchmen	2	4	1	5	1	3	....	5	1	6
Boiler washers	1	2	....	2	....	5	2	5	1	9
Hostlers	1	7	....	9	....	16	....	14	....	31
Other enginehouse and shop employees	....	19	1	15	....	10	6	34	4	29
Other employees	1	10	3	10	1	13	....	16	4	36
Nonemployees	1	9	1	42	2	34	1	107	6	123
Total	28	517	22	660	20	764	66	1,157	72	1,560

for extension of time for removal of flues, as provided in Rule 10. Our investigations disclosed that in eight of these cases the condition of the locomotives was such that no extension could properly be granted. Eleven were in such condition that the full extensions requested could not be authorized, but extensions for shorter periods of time were allowed. Twenty extensions were granted after defects disclosed by our investigations had been repaired. Eleven applications were canceled for various reasons. Ninety-six applications were granted for the full period requested.

In my former reports recommendations were made, in accordance with Section 7 of the act, as amended, for the application of automatic fire doors, power reverse gears, power grate shakers, horizontal handholds, stirrups on cabs, and water columns with water glass and gage cocks attached with an additional water glass located on the left side or boiler back head, and reasons given therefor. While many of the carriers have recognized the value of these appliances and considerable progress has been made in the application thereof, the installations are not progressing as fast as could be desired to obtain the maximum degree of safety; therefore the recommendations are respectfully renewed and should be made a requirement of the rules.

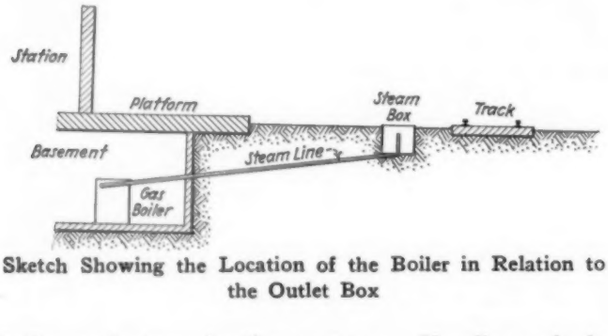
Low Water Alarms

Reference was made in my last annual report to the application of audible low-water alarms by many of the carriers in an effort to reduce the number of explosions caused by low water. A number of such devices have been developed, some of which appear to have proved themselves reliable from the viewpoint of the users.

A large percentage of the fatalities and many serious injuries would be prevented by the use of dependable low-water alarms, and the carriers who have applied these devices and those who assist in their further use and development are to be highly commended for the contribution to safety.

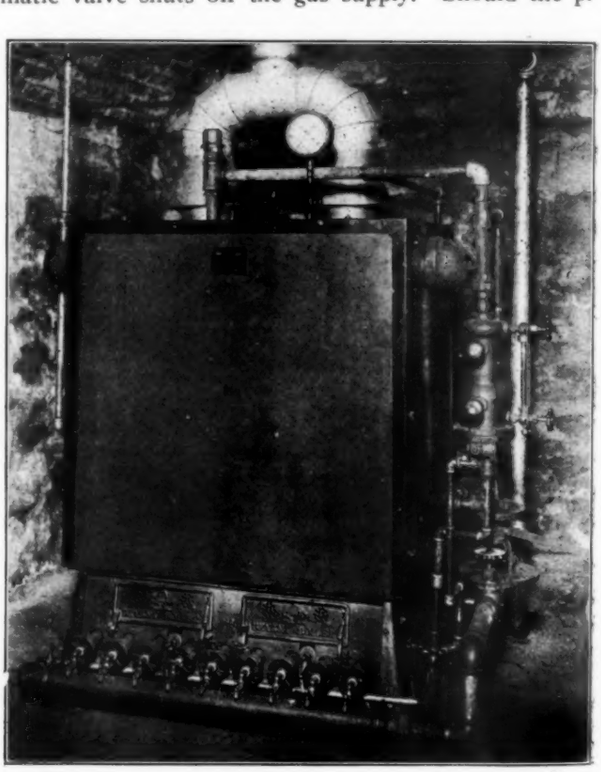
Pullman Car Is Gas Heated During Lay-Over

ENGINEERS of the Wabash in conjunction with those of the Illinois Power & Light Co. and the Bryant Heater & Manufacturing Co., Chicago have apparently solved the problem of heating Pullman cars which lay over at Danville, Ill., by means of a gas fired boiler and steam heating system. Usually a single Pullman car is brought to Danville over the Chicago & Eastern Illinois from Evansville, Ind., arriving every evening about 9.45 p.m. and being switched over to the Wabash to be taken to Detroit, leaving Danville at 11.10 p.m. During this lay-over the car stands on the tracks in front of the Wabash station. As there was formerly no provision for heating other than by having a locomotive coupled to the car, the Wabash sought for a better and less expensive method of keeping the car at a comfortable temperature.



Sketch Showing the Location of the Boiler in Relation to the Outlet Box

After a careful investigation of the various factors involved, a heating plant was located in the basement of the railway station, consisting of a No. 9-S-4 Bryant gas boiler fully equipped with automatic controls, and steam is piped from the boiler to a steam box adjacent to the track. All that is required of the attendant is to open and close a valve in the gas supply line. Water from the city lines automatically enters the boiler as required. A steam pressure valve controls the supply of gas entering the burners. If the water in the boiler should become too low for safety, an automatic valve shuts off the gas supply. Should the pilots become extinguished for any reason, the gas is automatically shut off.



Bryant Gas-Fired Boiler Installed at Wabash Station, Danville, Ill.

The boiler will not operate again until the pilots are relighted. All of these safety devices work without attention.

The function of the gas boiler is to generate and deliver steam at fourteen pounds pressure. The steam is conducted through an insulated line under the station platform and tracks to the steam box located near the track where the Pullman coach stands during the lay-over. The system was designed to heat as many as three cars, as at times this additional capacity is needed for extra Pullmans or for private cars. The operating cost varied from $31.96 in January to $5.66 in May or substantially less than when cars are heated by a locomotive or other appliance.

Southern Class Rates Revised

WASHINGTON, D. C.

A GENERAL revision of class rates in the Southeast and between that section and Official Classification territory, to the north of it, designed to place the rate structure of the South on a "dry-land" basis of mileage scales, as distinguished from the old "basing-point" system of rate-making, becomes effective on January 15 by tariffs filed by the railroads in compliance with the findings of the Interstate Commerce Commission in its Southern Class Rate Investigation, No. 13,494 on the commission's docket. The purpose of the revision, in the mind of the commission, was to simplify the rate structure rather than to effect the revenues of the carriers, and there is some dispute as to its probable effect in that direction.

This investigation has been under way, under the general direction of Commissioner Eastman, since February, 1922. The basing-point system, under which key rates were made to competitive points on the coast or inland navigable waters or at important railroads junctions, and rates to intermediate points were made by combinations on the basing points, was to a large extent broken up by a revision of rates put into effect on January 1, 1916, following an order issued by the commission in 1914 denying further fourth section relief as to many of the basing points, but vestiges of the old system have remained in effect until now. The work of revision was interrupted during the period of federal control but was later resumed, and, after the commission had denied fourth section relief in other cases affecting the southern rates, the railroads reached the conclusion that a similar policy would be followed as to other points and decided that the time had come to eliminate fourth section departures generally. Efforts were made to obtain the approval of shippers to a general permanent revision of the rates on a "dry-land" basis, but the shippers and state commissioners had various plans of their own and finally in 1921 a joint petition was presented to the commission asking it to institute an investigation. Hearings were held from May, 1922, to March, 1923, during which over 15,000 pages of testimony was taken, accompanied by over 2,000 exhibits. A proposed report was served by Commissioner Eastman, after which a traffic test was conducted by the carriers for the purpose of determining the probable revenue effect of the rates recommended, oral argument was held before the commission, and on July 7, 1925, the commission issued the report, by Commissioner Eastman, containing the 19 findings which, as subsequently modified to some extent, are the basis of the revision about to become effective.

No order prescribing the rates was made, but the carriers were given 30 days in which to advise the commission as to whether they were prepared to accept the findings and proceed to join with the commission and representatives of the shippers in working out the details of the system of rates approved in the report. The opinion was then expressed that the new rates should become effective not later than January 1, 1926.

This investigation placed before the commission a class-rate structure practically in its entirety, whereas former cases had dealt with parts only, and the basis of rates proposed in the report was intended to supersede all adjustments heretofore presented to the commission with reference to any of the rates in issue.

The revision proposed by the carriers, which was considered during the investigation, was fundamentally based upon mileage and fourth section principles were generally observed, in deference to the manifest ideas of the commission, but Commissioner Eastman in his report said that there were many inconsistencies from a distance standpoint and criticised the rates proposed because of too much adherence to previous relationships.

Following the original report in July, 1925, petitions were filed by both carriers and shippers seeking various modifications of the findings and these were passed upon in three supplemental reports making various changes in the original findings.

One of the first findings made by the commission in the Eastman report, with which the new rates endeavor to comply was that the normal level of interstate class rates within southern territory should be based upon a distance scale or scales sufficiently extended so that the length of all hauls will be covered, and the most important feature of the revision is that for standard lines a single scale of distance rates is used as the basis of maximum reasonable interstate class rates, between points in southern territory, except that to and from points in the Florida peninsula, south of the line of the Seaboard Air Line from River Junction to Jacksonville, there are added to the rates so determined arbitraries likewise based upon a distance scale.

The rates to Florida were formerly based on the full Jacksonville combination and the carriers had proposed to publish joint rates with separate factors to and beyond Jacksonville. The standard distance scale, as set forth in the report as Appendix K, starts with 30 cents per 100 lb., first class, for distances of 5 miles and under, and runs up to rates for 1500 miles. The Atlantic Coast Line, Seaboard Air Line and Florida East Coast refused to make the commission's basis of rates to and from Florida effective on their own responsibility without an order from the commission and on October 27 it issued an order giving effect to its previous findings. In its order the commission said that the other carriers had indicated a "willingness" to accept the findings, but all the southern carriers signed a protest against this language, saying that their position had not been changed and was the same as that of the three roads that declined to make the rates effective without an order. They said they had proceeded in good faith to make effective the commission's final conclusions, without subscribing, however, to the equity thereof.

For certain lines classed as short or weak lines a special scale of arbitraries was provided, to be added to the rates via standard lines.

In place of the six numbered and four lettered classes of the Southern Classification, the commission substituted 12 numbered classes, with uniform class percentage relationships, class 12 being 17.5 per cent of the first class rates and class 2 being 85 per cent.

Bases for the establishment of through interterritorial rates to and from Official Classification territory were proposed to take the place of combinations on the Ohio river in which the proportion of distance in the respective territories was given consideration in relation to the different basis rates in the two territories. In publishing the rates the carriers have equalized the rates from Chicago to the South with the all-rail rates from New York, although there are rail-and-water rates which are less by specific amounts than the all-rail rates.

Although the southern railroads have spent some two million dollars in the effort to revise their rates in a way to meet the expressed wishes of the commission it is understood that complete satisfaction has not yet been obtained and that some of the shippers who opposed the rates proposed by the railroads do not like the new rates much better. It is also understood that there will be

(*Continued on page 148*)

Death of Charles Morgan Kittle

Former senior vice-president of Illinois Central, who became president of Sears, Roebuck & Co., had remarkable Career

CHARLES MORGAN KITTLE, formerly senior vice-president of the Illinois Central railroad, died at St. Luke's Hospital in Chicago on January 1. For three years previous to his death he had been president of Sears, Roebuck & Company.

The death of Mr. Kittle when he was only 47 years old terminated one of the most remarkable and romantic careers in the more recent history of railroading and business in the United States. His retirement from railroad service to accept the presidency of a large mercantile concern attracted widespread attention. There was much curiosity regarding the reasons why Julius Rosenwald, the controlling stockholder of Sears, Roebuck & Co., went to the railroad business for a man to succeed him when he decided to retire from the presidency of this company. There was much curiosity as to how a man who had had all his business experience and training in railroad service would succeed as the active head of a large mercantile company. That Mr. Kittle within a very few years demonstrated that an able railroad man could soon become a great merchant was the cause of pride and gratification to his former associates in the railroad business. His death while still a young man was a shock to the business world, and especially to the railroad world.

Charles M. Kittle

Mr. Kittle was born at Elkins, W. Va., on October 9, 1880. After having had only a common school education he entered railroad work when 15 years old as a station clerk on the West Virginia Central & Pittsburgh, now a part of the Western Maryland. He thus began his career without the education, connections or position which would have afforded him any special opportunities; and yet when he was barely 44 years old he had declined the presidencies of four of the principal railroads of the United States and become the president of one of its largest mercantile establishments.

Prior to 1900 Mr. Kittle served in station and yard service on the Atlantic Coast Line, the Southern and the Baltimore & Ohio. He entered the employ of the Illinois Central in 1900 and served in various positions in the maintenance of way, mechanical, transportation and accounting departments. From October 1, 1910, to July 1, 1912, he was general freight claim agent of the Illinois Central and Yazoo & Mississippi Valley. He was then made assistant to the president, and in November, 1916, became vice-president. From June, 1918, to March 1, 1920, he was federal manager of these roads and of the Gulf & Ship Island, and on March 1, 1920, became senior vice-president, which office he held until he became president of Sears, Roebuck in November, 1924.

Throughout Mr. Kittle's railroad career he showed an insatiable desire to learn everything he could about the railroad business, and seemingly inexhaustible energy both in learning the business and in doing his daily work. He had a magnetic personality and a loyalty to his subordinates, associates and superior officers, as well as to his friends, which strongly attracted people to him. He had the great executive's ability to make prompt decisions upon even important problems and to inspire his subordinates to work with an energy comparable to his own. The fact that within a year before he went to Sears, Roebuck he could have become president of any one of four different railroads indicates the prestige he had acquired in the field in which he spent most of his life.

Mr. Rosenwald's selection of him for president of Sears, Roebuck & Co. was a tribute not only to Mr. Kittle, but to railway officers as a class. He gave a clue to the reasons for it in remarks made by him in introducing Daniel Willard as a speaker a few months ago at a dinner of the Illinois Chamber of Commerce in Chicago. He felt he must get a man who had demonstrated outstanding executive ability. He decided that he was most likely to find such a man in the railroad business. As he stated it, he was looking for a "mail order Daniel Willard." One of the requirements was that the man must be young. When Mr. Rosenwald set up his specifications for a president for his company he did not know Mr. Kittle personally. He finally selected him because, after looking around, he decided he possessed more of the qualifications needed than any other man in the country.

An interesting fact is that immediately after installing Mr. Kittle as his successor as the active head of Sears, Roebuck & Co. Mr. Rosenwald went to Europe and stayed five months. In his remarks at the luncheon of the Illinois Chamber of Commerce he said, "I assure you I never have regretted for a moment the choice that I made."

The immediate cause of Mr. Kittle's death was septic poisoning following upon an operation for gall bladder trouble.

Southern Class Rates Revised

(*Continued from page 147*)

some complaints filed by shippers against the new rates.

The commission in its recent annual report expressed confidence that "the new rates will represent important and marked progress toward a harmonious, stable and comparatively simple rate structure."

In April, 1927, the commission issued an order, which has since been postponed, revising the class rates in and to and from the Southwest on a mileage basis and a proposed report is soon to be issued as to a similar proceeding in the Eastern Class Rate Investigation, embracing all the interstate class rates within official territory.

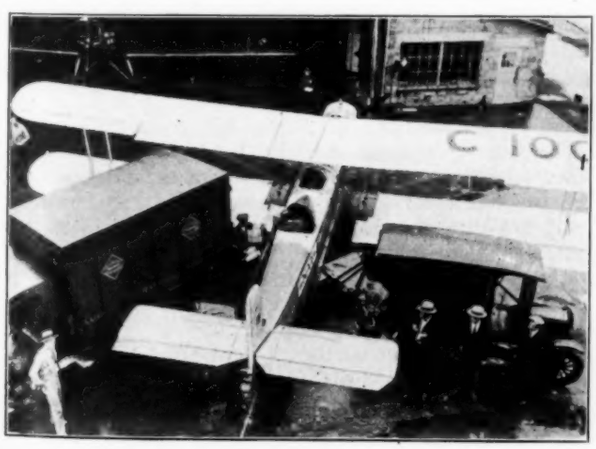
N. A. T. Country's Largest Air Transport Line

Operates night and day mail and express service between New York and Chicago—Carries passengers also between Chicago and Dallas.

One of the N. A. T.'s Newest Mail, Express and Passenger Planes—National Air Transport, Inc., Photos

THE National Air Transport, Inc., holds contracts with the government and with the American Railway Express Company for the transportation of mail and express by airplane between Chicago and Dallas, Tex., and between Chicago and New York. In addition to the cities named, the N. A. T. serves Cleveland, Ohio, on the eastern line, and, on the southwestern line, Moline, Ill., St. Joseph, Mo., Kansas City, Wichita, Kan., Ponca City, Okla., Oklahoma City, and Fort Worth, Tex. Its planes fly 5,000 miles every 24 hours, making the N. A. T. the largest air transport company in the United States and the second largest in the world. Up to December 31, its planes had flown a total of 1,500,000 miles, with a loss of only one life and without the loss of any mail or express.

Two round trips are operated daily between New York and Chicago. A day plane leaves New Brunswick, N. J., the eastern terminus, 30 miles from New



National Air Transport, Inc., Photos

Mail and Express Trucks Unloading Air Shipments at New Brunswick, N. J.

York, at 12:15 p. m., and arrives at Chicago at 7 p. m., where connection is made with the planes of another air mail contractor, which fly from Chicago to San Francisco. A night plane also leaves New Brunswick at 9:35 p. m., arriving at Chicago at 5:35 a. m., and connecting with several north and southbound planes. Eastbound, a plane leaves Chicago for New York at 8 a. m., after receiving shipments from the connecting plane from San Francisco, and arrives at New Brunswick at 4:45 p. m. The eastbound night plane leaves Chicago at 8 p. m. arriving at New Brunswick at 4:45 a. m. One round trip daily is operated between Chicago and Dallas, the southbound plane leaving Chicago at 5:50 a. m. and arriving at Dallas at 5:35 p. m. The northbound plane leaves Dallas at 7:45 a. m., arriving at Chicago at 7:20 p. m. to connect with the night plane for New York. Night service between Chicago and Dallas is expected to be started Feb. 1, the lighting of this airway having been completed.

N. A. T. Traffic By Months

	Mail		Express
	Chicago-Dallas	Chicago-New York	New York-Chicago-Dallas
May, 1926	7,235 lb.		
June	8,451 lb.		
July	8,553 lb.		
August	8,191 lb.		
September	7,697 lb.		
October	8,415 lb.		
November	7,950 lb.		
December	8,066 lb.		
January, 1927	6,593 lb.		
February	6,714 lb.		
March	8,069 lb.		
April	10,132 lb.		
May	9,471 lb.	Operation began	Operation began
June	10,542 lb.	September 1,	September 1,
July	9,484 lb.	1927	1927
August	9,954 lb.	43,984 lb.	4,445 lb.
September	9,916 lb.	45,483 lb.	4,677 lb.
October	10,314 lb.	41,245 lb.	2,635 lb.
November	9,322 lb.	42,500 lb.	3,300 lb.
December (ets.)	9,500 lb.		
Total	174,569 lb.	173,212 lb.	15,057 lb.

Heavy Traffic Handled

In the first year of its operation, over the Chicago-Dallas line, the National Air Transport handled 107,000 lb. of mail, flying over a million miles without accident and without the loss of any mail. It completed 96 per cent of its schedules. In the first six months of this year, the National Air Transport flew 343,708 miles between Chicago and Dallas and carried 51,274 lb. of mail. In the amount of mail that it handled in this period, it was second only to the air transport line operating between Salt Lake City, Utah, and Los Angeles, Cal. For the year ended December 31, 1927, it carried a total of 110,011 lb. of mail on the southwestern line, an average of 9,167 lb. per month.

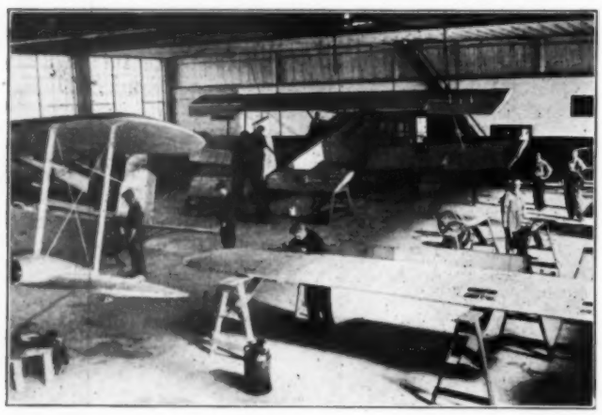
The operation of the N. A. T.'s Chicago-New York

line, the institution of air express service under contract with the American Railway Express Company, and the regular transportation of passengers on the Chicago-Dallas line, all began on September 1 of last year. In the month of September, its two round trip daily schedules between New York and Chicago and its one round trip daily schedule between Chicago and Dallas carried 203 passengers over a total of 80,222 passenger miles; in addition to 53,476 lb. of mail and 5,200 lb. of express between the various cities on the route. During this month the N. A. T. planes flew a distance of 151,780 miles without serious mishap and without the loss of any cargo or injury to anyone.

From September 1 to December 31, the N. A. T. carried 173,212 lb. of mail on the Chicago-New York line, an average of 43,303 lb. per month. In the preceding year this line averaged from 30,000 to 35,000 lb. per month. In the first four months of its operation of express service, the N. A. T., carried 15,057 lb. of express, on both the eastern and southwestern lines, an average of 3,766 lb. per month.

Company Well Financed

The National Air Transport, Inc., was organized in May, 1925, with an authorized capital stock of $10,000,000, of which $2,000,000 was paid in on the day of organization. It numbers among its stockholders some of the best known bankers, manufacturers, and engineers of New York, Detroit, Philadelphia, Cleveland, and Chicago. Earle H. Reynolds, president of the People's Trust and Savings Bank, Chicago, is president of the National Air Transport. Colonel Paul Henderson, formerly assistant postmaster general and the "father of the air mail," is vice-president and general manager. R. W. Ireland is general traffic manager, E. P. Lott is manager of operations, and L. D. Seymour is chief engineer. All of these officers have their headquarters at Chicago.



National Air Transport, Inc., Photos

Airplane Repair Shop of the N. A. T. at Chicago

The National Air Transport began operation between Chicago and Dallas in May, 1926, after securing an air mail contract from the government. In this service it used 10 Curtiss Carrier Pigeons and 35 Liberty engines, the entire equipment costing more than $300,000.

The N. A. T. now owns 18 Douglas airplanes which it took over from the government when it assumed the operation of the New York-Chicago air mail line; eight Travel Air monoplanes with mail and express facilities and an enclosed cabin for passengers; seven Curtiss Carrier Pigeons equipped for handling mail and express; one Aerial Mercury and one Stout all-metal monoplane of the cabin type, equipped with three Wright engines and having accommodations for eight passengers in addition to two operators.

The administrative personnel, in addition to the vice-president and general manager, the traffic manager, and the manager of operations, consists of four division traffic managers located at Dallas, Tex., Kansas City, Mo., Chicago, and New York, and 11 traffic agents; an engineering division; an auditing department; a publicity representative; an advertising representative; and a purchasing agent.

In the operating department are two division superintendents, 11 field managers, 23 pilots and 52 mechanics. The operating department maintains a repair depot, employing 10 men, and an engine overhaul shop.

Eight planes are operated daily between New York and Chicago and four planes between Chicago and Dallas. Between New York and Chicago, planes and pilots are changed at Cleveland, while on the line between Chicago and Dallas, planes and pilots are changed at Kansas City.

Cost of Operation

The cost of operation of the National Air Transport planes, exclusive of overhead and the cost of selling the service, is estimated at approximately 51 cents a mile. This is divided as follows: Communication, including telegraph, telephone, and radio, 1 cent; transportation, including the pay of the pilots and the cost of gasoline and oil, 15 cents; maintenance of flying equipment, 12 cents; maintenance and operation of flying fields, 11½ cents; depreciation, 11½ cents.

The Liberty engines used in the Douglas planes between Chicago and New York and in the Curtiss Carrier Pigeons are overhauled after every 150 hours of flying and are depreciated on a basis of a life of 550 hours. The Wright Whirlwind air-cooled engines used in the Travel Airs and in the Stout plane, are overhauled every 250 hours and are depreciated on a basis of a life of 1,000 hours. These figures were established arbitrarily, since up to the present time the company has not worn out or discarded any engines of either type. The engine overhaul consists of complete dis-

N. A. T. Schedules

	Daily				Daily		
E.T.	11:00 a.m.	8:00 p.m.	Lv.	New York (Pennsylvania Station) Arr.	6:40 a.m.	6:40 p.m.	
	12:15 p.m.	9:35 p.m.	Lv.	New Brunswick, N. J. (Hadley Field) Arr.	4:45 a.m.	4:45 p.m.	
	4:20 p.m.	2:15 a.m.	Arr.	Cleveland, Ohio Lv.	12:15 a.m.	12:15 p.m.	E.T
C.T.	3:35 p.m.	1:30 a.m.	Lv.	Cleveland, Ohio Arr.	11:00 p.m.	11:00 a.m.	
	7:00 p.m.	5:35 a.m.	Arr.	Chicago Lv.	8:00 p.m.	8:00 a.m.	
		5:50 a.m.	Lv.	Chicago Arr.	7:20 p.m.		
		7:20 a.m.	Lv.	Moline, Ill. Lv.	5:15 p.m.		
		10:20 a.m.	Lv.	St. Joseph, Mo. Lv.	2:40 p.m.		
		11:18 a.m.	Lv.	Kansas City, Mo. Lv.	1:57 p.m.		
		1:18 p.m.	Lv.	Wichita, Kan. Lv.	11:57 a.m.		
		2:05 p.m.	Lv.	Ponca City, Okla. Lv.	11:10 a.m.		
		3:05 p.m.	Lv.	Oklahoma City, Okla. Lv.	10:10 a.m.		
		5:15 p.m.	Lv.	Ft. Worth, Tex. Lv.	8:15 a.m.		
		5:35 p.m.	Arr.	Dallas, Tex. Lv.	7:45 a.m.		C.T
	Read Down				Read Up		

assembling, inspection, careful check of all dimensions, replacement of all parts that need to be replaced, careful reassembling, and a test run of three hours on the engine test stand. The planes themselves are overhauled after each 1,000 hours of flying.

The lighted airways over which the National Air Transport planes fly, extending now from New York to Chicago and soon to extend from Chicago to Dallas, are equipped and maintained by the government. The lights are revolving beacons located from 10 to 25 miles apart.

Express Traffic Growing

The express traffic handled by the National Air Transport, while still the smaller part of the business that it handles, is increasing steadily. The National Air Transport acts merely as the carrier, the American Railway Express Company handling the solicitation of traffic and the transportation of cargoes to and from the flying fields of the N. A. T. The express company also handles the billing of all shipments, the procedure that is followed being exactly the same as in the case of express shipments handled by railroads. A large staff of traffic solicitors is maintained by the express company, 14 of them being located in Chicago alone.

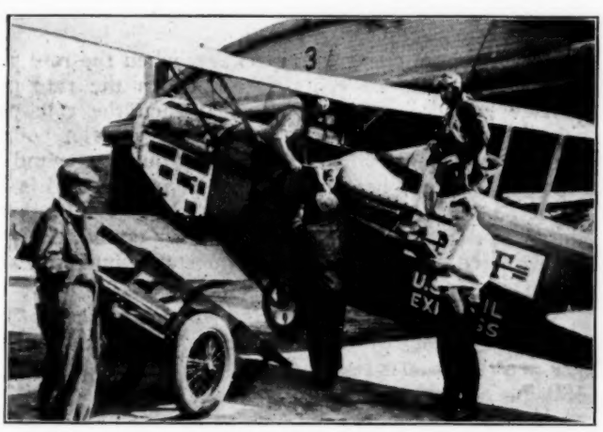
The principal inducement offered by air express service to shippers is, of course, the speed in transit. There is also some additional inducement in the safety of air shipments from theft. The pilots of the planes and all employees at the flying fields are armed. Shipments of unusual value are carried in a suitcase safe made of sheet steel for fire and theft resistance. Every precaution is also taken to protect all shipments from fire. The mail and express compartments of the planes are lined with duralumin and asbestos. A fire-extinguishing fluid is kept under pressure in the plane so that the engine compartment can be flooded with it in case of fire.

As an indication of the time saved in the transportation of mail and express, the National Air Transport advertises the following savings in time in transit from Chicago: To New York, 12 hr. (one business day); to San Francisco, 41 hr.; to Houston, Tex., 11 hr. (one business day); to Los Angeles, 40 hr.; to Philadelphia, 11 hr. (one business day); to Seattle, Wash., 24 hr.; to Boston, 15 hr. (one business day); to Denver, 24 hr.; to Mexico City, 14 hr. (one business day); to Salt Lake City, Utah, 28 hr.; and to Washington, D. C., 8 hr. Similar savings in time are possible between most other principal points in the United States.

Since air express transportation was started on September 1, a wide diversity of shipments have been handled by airplane. Some of the principal shipments have consisted of radio sets, dresses, gloves, cigars, machine parts, moving picture reels, bank shipments, advertising copy, cuts and electrotypes, specialties, railroad tickets, trade journals, and candies. Most of the express traffic has been westbound out of New York, in contrast with mail shipments, the bulk of which have been eastbound. A fairly large quantity of the express in both directions goes all of the way between the eastern and southwestern termini, but as was to be expected, most of it is handled on the line between New York and Chicago.

Many instances of commercial uses of air mail and air express which have made or saved money for the users could be cited. A few such cases indicate however, that air transportation is being found commercially valuable. On a Saturday a part of an automatic press feeder broke in the plant of a Dallas, Tex., publishing company. It could be replaced only by the New York office of the press manufacturer. The part was immediately telegraphed for and was shipped by air express from New York at once. The part arrived at Dallas in time for delivery early on Monday morning and the disabled press was again in operation at 10 a. m. on that day. A similar accident occurred on Monday and again the air express came to the rescue. As a result of its use the needed part was in Dallas and in service at 8 a. m. on Wednesday morning. A hat manufacturer in New York mailed 5,000 circulars by air mail to his customers, advising them of a special lot of four hats for window display use, which had been made up and which would be shipped by air express upon order. Within a short time 1,000 lots of the special display had been sold and shipped by air express. This is understood to have been the largest air express shipment ever made in the East. The consignees were located in Chicago, Ft. Wayne, Ind., Dallas, Tex., Kansas City, Mo., Houston, Tex., Omaha, Neb., Salt Lake City, Utah, and many other places.

Many banks use the air mail in transferring check clearances because of the saving of interest made possible by the fast transportation. The First National Bank of Wichita, Kan., for example, which mails checks regularly for transportation on the N. A. T. planes, figures that it saved over $1,143.57 net over a six months' period. In that time the bank's air mail numbered 2,006 pieces. One day's interest on the total sum of $25,435,000, represented by the checks so mailed, was $1,393, from which the extra postage for air mail, amounting to $249.43, was deducted to obtain the net saving. Two Chicago banks report savings of from $2,000 to $4,000 a month from the use of air mail. The Marland Oil Company, Ponca City, Okla., is another



National Air Transport, Inc., Photos

N. A. T. Field Manager Checking Mail Out of a Plane at Cleveland, Ohio

regular user of air mail service. According to the vice-president of the company, steamship bills of lading covering cargoes which are exported through Texas City, Tex., are all sent by air mail to New York. These cargoes are sold f. o. b. Texas City and the revenue therefrom begins to draw interest as soon as the bills of lading reach New York. Since each cargo is valued at about a quarter of a million dollars, the company is able to save $50 in interest, figuring the interest rate at four per cent, on the two days saving in time between Ponca City and New York.

The railways themselves are regular users of the air

mail. The Illinois Central, for example, uses the air mail not only in handling general correspondence, but also in sending out passing reports from its service bureau. These passing reports are sent by air mail to the traffic representatives of the Illinois Central throughout the country, so that there is a minimum of delay in furnishing information to shippers who want to know about the progress being made by their cargoes.

Rates Charged for Air Transportation

As is generally known, the rate charged for the transportation of mail by airplane is 10 cents per half ounce or fraction thereof anywhere in the United States, including the rail haul to points not immediately on the air lines. Any kind of postage stamps on any envelope can be used if the inscription "Via Air Mail" is written on the face of the envelope, and the mail can be put into any mail box.

The express rates are stated in cents per quarter pound and are based upon a measurement of not more than 50 cu. in. to each quarter pound, and upon a valuation of not to exceed $50 for packages weighing less than 100 lb., or 50 cents per pound actual weight for packages weighing over 100 lb. Charges are computed separately for each package when shipments consist of more than one package, and fractional weights of less than four ounces are considered one-quarter pound in computing the charges. The rate per quarter pound between certain principal points on the N. A. T. lines are as follows:

Chicago to New York	$0.25
Chicago to Cleveland	.25
Chicago to Kansas City	.25
Chicago to Dallas	.40
New York to Kansas City	.50
New York to Dallas	.50
Cleveland to Dallas	.50

The minimum charge per package, when the rate per quarter pound is 25 cents, is $1; when the rate per quarter pound is 40 cents, $1.60; when the rate per pound is 50 cents, $2; when the rate per quarter pound is 60 cents, $2.40; when the rate per quarter pound is 65 cents, $2.60; when the rate per quarter pound is 75 cents, $3. When the cubic measurement of an express shipment exceeds 50 cu. in. per quarter pound, charges are assessed on the basis of one-quarter pound for each 50 cu. in. or fraction thereof in excess.

When the declared value of a shipment exceeds $50 for any shipment of 100 lb. or less, or exceeds 50 cents per pound actual weight for any shipment in excess of 100 lb., an additional charge of 15 cents is made for each $100 or fraction thereof in excess of the value regularly provided for.

General express traffic of almost every kind can be handled by airplane, even including perishables when properly packed and of a character to stand the hazards of airplane transport and to cause no damage to other shipments. Shipments which cannot be taken are those valued at over $5,000, live shipments of any kind, explosives, highly inflammable matter or acids, shipments weighing over 200 lb., fragile articles liable to damage from shock, shipments whose combined length and girth exceeds 106 in., and all articles not accepted for transportation in express service by rail.

Air express service includes special delivery service at destination and pickup service at the shipping point where practicable. The same requirements for packing and marking apply as in the case of ordinary shipments by railway express. The express company makes every effort to deliver air express shipments to the consignees within a half hour of their arrival at destination.

As stated above, express and mail are carried to the flying fields of the National Air Transport by the American Railway Express Company and the postoffice department, the National Air Transport not being responsible for this. At New York, Hadley field at New Brunswick, N. J., is used, this being approximated 30 miles from the Pennsylvania station at New York where express and mail are collected for forwarding by airplane. The rail and highway journey from the Pennsylvania station in New York to the field requires approximately one hour and a quarter. The flying field at Chicago is about 45 min. from the center of the city, that at Kansas City is about ten miles from the center of the business district, and that at Fort Worth about seven miles from the business district. Mail and express are transported to the fields from the cities by motor truck.

Passenger Traffic

The number of passengers carried by the National Air Transport planes, 203 during the month of September, is surprising when it is realized that the company makes practically no effort to secure this business. Its only regular passenger service, between Chicago and Dallas, where it operated enclosed cabin planes accommodating three passengers in addition to the pilot and the cargo, has been temporarily discontinued. While this line was in operation it carried, among others, many business men who were thus able to leave their home offices in the morning, transact business in distant cities during the day and return home before evening.

The rate for passenger transportation on this line was 10 cents a mile. The transportation of passengers on the line between New York and Chicago is discouraged by the National Air Transport, but it will carry one passenger in each day plane in emergency. The planes used on this line have no ordinary facilities for handling passengers and those who make the trip are given a place on a small seat which is put into the baggage compartment. The first rate for transportation from Chicago to New York was fixed at $100, but there were so many demands for transportation at this rate, which the National Air Transport was unable to meet, that it raised the rate to $200. Even this has not succeeded in discouraging prospective air passengers between New York and Chicago and many more apply for passage on the planes than the N. A. T. can take care of.

No avoidable chances are taken with the safety of passengers. If flying conditions are bad, no passengers are taken up. While if the flying conditions become bad unexpectedly while a plane with passengers is on its way, the plane is landed and the passengers are forwarded to their destination by train. The reason for this is not that there might be any great danger to the passengers' safety, but rather that the pilots are charged with the primary duty of getting the mail through in spite of any conditions which may arise, and it is felt by the officers of the National Air Transport that their pilots will be less inclined to take necessary chances to get the mail through if they have the responsibility for the safety of passengers on their hands. The pilots, of course, have parachutes which they can use in case of accident.

Its attitude toward the transportation of passengers is significant evidence of the conservatism of the management of the National Air Transport. It is definitely committed to the task of proving the efficiency and reliability of air transport.

New Books

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

The British Steam Locomotive, 1825-1925, by E. L. Ahrons, An illustrated history of British locomotives and locomotives built in Great Britain for use in other countries. 391 p. Pub. by Locomotive Pub. Co., London, England, and Spon & Chamberlain, New York City, $12.

The Floods of 1927 in the Mississippi Basin, by H. C. Frankenfield and others. Forecasts and observations by the U. S. Weather Bureau in which tribute is paid to the co-operation of railways. Supplement 29 to Monthly Weather Review. 49 p. and map. Pub. by U. S. Govt. Print. Off., Washington, D. C., 25 cents.

The Pan-American Railway 1879-1927—Some References Chronologically Arranged. This railway project is on the agenda of the 6th Pan-American conference at Havana, Jan. 16. 20 p. Pub. by Library, Bureau of Railway Economics, Washington, D. C. Apply.

Railway Statistics: Their Compilation and Use, by A. E. Kirkus. Presents the development of railway statistics in Gt. Brit., the statistics now compiled in accordance with the provisions of various acts of Parliament and the purposes of them, and important aspects of presentation and application with some mention of railway statistical information available in other countries. 134 p. Pub. by Sir I. Pitman & Sons, Ltd., London, Eng., 5 shillings.

Transport in the United States of America, by Alexander A. Neopihanoff. A survey of our transportation systems, partly in Russian and partly in English, based on recent source material and communication with railway officials in this country. The chapter bibliographies indicate that the RAILWAY AGE and recent books and pamphlets on American transportation generally are available in such relatively far-off places as Moscow and Harbin. 136 p. tables, Pub. at Harbin, Manchuria. Apply to Author.

Periodical Articles

Railway Ownership of Inland Waterways, by C. D. Campbell. Results in Great Britain. Economic Journal, December, 1927, p. 666-670.

Progress in Railroad Mechanical Engineering, by Railroad Division, American Society of Mechanical Engineers. Illustrated. Mechanical Engineering, January 1928, p. 35-39.

You've Got to Rub People the Right Way, by Helen Christine Bennett. Sketch of the career of E. E. Loomis, President of the Lehigh Valley. American Magazine, January, 1928, p. 18-19, 80.

The Motorist's Part in Grade Crossing Accidents. Additional measures of regulation and control advocated by C. E. Hill of the National Safety Council. Literary Digest, December 24, 1927, p 17-18.

The Future of Aerial Transport, by "Neon." The English air expert's remarks on railway performance in all weathers vs. air service uncertainties are on p. 89. Atlantic Monthly, January, 1928, p 80-90.

Hogs, Hogheads and Tallowpots, by A. W. Somerville. This description of certain railway particularities written primarily for non-railroaders is illustrated with pictures of some of the newer and larger types of locomotives. Saturday Evening Post, January 7, 1928, p. 10-11, 59-60, 63-64, 69.

By Sledge to the Middle Ages, by Eleanor Lattimore. With six Russian phrases and eleven pieces of baggage the author proceeded as far as she could by the Trans-Siberian, as much farther as was possible by Siberian branch lines, and then seventeen days by sledge into Central Asia to join her husband. Her comments on railways and other transport are most interesting. Atlantic Monthly, January, 1928, p. 1-11.

Looking Backward

Fifty Years Ago

An experimental section of track on the Cincinnati, Hamilton & Dayton has been fitted with cast iron ties. Wooden blocks are fitted into sockets under the rails to give the track the needed elasticity.—*Railway Age,* January 17, 1878.

During 1877, a year of depression in all industry, 2,260 miles of line were added to the railway system of the United States. Of this mileage, 1,446 miles were of "wide-gage" and 794 miles of "narrow gage." The cost of construction was exceptionally low by reason of the general industrial depression.—*Railroad Gazette,* January 11, 1878.

A decision has been handed down by the United States Supreme Court in which it is held in the case of liability at a level railroad crossing that "from the character and momentum of a railroad train, it cannot be expected that it shall stop and give precedence to an approaching wagon to make the crossing first. But it is bound to give due warning of its approach. * * * Those who are crossing a railroad track are bound to exercise ordinary care and diligence to ascertain whether a train is approaching."—*Railway Age,* January 17, 1878.

Twenty-Five Years Ago

The control of the Reading has passed into the hands of the Baltimore & Ohio and the Lake Shore & Michigan Southern (now the New York Central) through the acquisition by these two railroads of a majority of the capital stock. This change also affects the control of the Central of New Jersey and places at the disposal of the B. & O. and the Lake Shore about half of the unmined anthracite in Pennsylvania.—*Railroad Gazette,* January 16, 1903.

By a decision of the Pennsylvania Supreme Court the Wabash has been prohibited from extending its new Pittsburgh, Carnegie & Western line into the city of Pittsburgh, Pa., until permission is secured from the city council. The Wabash has stopped work within the city on its bridge over the Monongahela river, on its line and on its passenger station.—*Railroad Gazette,* January 16, 1903.

Ten Years Ago

With the acquisition of control of the railroads by the government the necessity for the Railroads' War Board has ceased and on December 31 the members of that body resigned. Director General McAdoo issued a preliminary order covering the change in control on December 27 and announced a cabinet of assistants to the director general which includes John Skelton Williams, formerly president of the Seaboard Air Line, financial advisor; Hale Holden, president of the Chicago Burlington & Quincy, to supervise the War Board organization; Henry Walters, chairman of the Atlantic Coast Line, operating advisor; Edward Chambers, vice-president of the Atchison, Topeka & Santa Fe, traffic advisor; Walker D. Hines, chairman of the Santa Fe, legal advisor, and Alfred H. Smith, president of the New York Central, temporary operating advisor for Official Classification territory.—*Railway Review,* January 12, 1918.

Director General McAdoo does not favor the idea that government freight should be carried free, as has been done in England. It is understood that the guaranty plan will virtually involve a pooling of earnings whereby a surplus on one road would be retained as a government fund to aid roads facing a deficit during their operation by the government.—*Railway Age,* January 11, 1918.

Odds and Ends of Railroading

In the railway police departments these days they are telling the tale of the recruit who was fired. This man, it appears, was so dumb that, after the theft of a 50 lb. box of soap from a box car, he arrested a tramp as the culprit.

Aunt Maggie Lattimore, attendant in the passenger station of the Southern Railway at Knoxville, Tenn., has just closed her 46th year in that position. When she began, as a girl of 19, she was not only a maid but also an information bureau and a train caller; also she performed the functions which now are attended to by the Travelers' Aid. With the growth of business at the station her duties have been lightened and she now works only eight hours a day instead of 12. She sometimes calls the trains when the regular announcers are not on hand; and she says that passengers tell her they can understand the announcements better than when "the boys" call the trains.

They All Have Their Troubles

The recent floods which damaged the New England railways and the Mississippi flood of last spring rather overshadow similar disasters elsewhere. That they do occur, however, is demonstrated by the accompanying illustration, depicting a train of the Great Western ploughing through a sizeable stretch of

(Underwood & Underwood)

water near Ely, Wales. In some cases, during the Welsh flood, the water rose as high as six feet over the tracks.

The Real History of "Casey"

Mrs. John Luther Jones of Jackson, Tenn., comes to the fore in the Chicago Daily News with the announcement that her husband was the original "Casey" Jones of song and story. According to her statement, "Casey" was 6 ft. 4 in. tall and was known to everyone along the line of the Illinois Central between Jackson and Water Valley, Miss., for the melody he could get from a locomotive whistle. In 1900, "Casey" took a run between Memphis, Tenn., and Canton, Miss., and he and his engine, the 638, became just as famous on the new run as on the old. "Casey" and his fireman, "Sim" Webb, were bowling along one Sunday night near Vaughn, Miss., and, in the words of the song: "All the switchmen knew by the engine's moans, that the man at the throttle was Casey Jones." The 638 was pounding along at about 60 miles an hour. There was a freight train on the passing track at Vaughn, but this was no unusual occurrence, so "Casey" didn't shut her off. When about 100 ft. from the end of the siding, it was seen that the freight train was not in the clear. The fireman jumped, but "Casey" stayed with the 638 until the crash and was killed. Mrs. Jones states that the well-known song extolling Casey's exploits was written by Wallace Saunders, a colored engine-wiper in the Jackson enginehouse, who had always been an ardent admirer of "Casey."

What's in a Name?

Most stations on new railroad lines, if they escape being dubbed Wilson, Anderson, Williams, West Yard, The Siding or G S Tower, just grow up with the country and assume place names. Not so with the 334 miles of line on the Hudson's Bay Railway between the Pas, Man., and Kettle Rapids. The Department of Railways and Canals has refused to let this new piece of railroad construction drift along with the country and only 11 of the 44 stations have been assigned place names. Leaving the Pas, the first station—Tremaudan—is named after the founder of a newspaper at The Pas, then comes the first representative in the legislature, followed by the name of a pioneer lumberman. Farther along we find the name of Halcrow, a trader, and then in succession, interspersed with a few place names, are those of an Indian missionary, a physician, a former prime minister and the present prime minister of Manitoba, the present member of parliament for Nelson, an explorer, a land surveyor, a navigator, an English writer, a governor and a mail carrier. Winston, 122 miles from the Pas, honors Winston Churchill. La Perouse pays homage to the French admiral of the same name who captured Fort Prince of Wales in 1782 and seven miles farther up the line we find Hearne, the Hudson's Bay governor at Churchill who surrendered the fort to La Perouse. Garraway's coffee house of London, where the first sale of the Hudson Bay Company's furs was held in 1871 receives for the first time recognition in the form of a sign on a station building. The names of four railway men will adorn as many stations—Thomas Turnbull, engineer of maintenance of way of the Western region of the Canadian National; W. A. Bowden, late chief engineer of the department of railways and canals; Earchman, an early engineer of the Hudson's Bay, and William Arnot who was for a number of years in charge of railway water supply on that railroad. The Hudson's Bay Company figures prominently in the list with the names of no less than seven of its pioneer employees and two ships to be placed on stations.

Santa Claus at Portsmouth

For a number of years employees of the car accountant's office of the Seaboard Air Line at Portsmouth, Va., have been conducting an unusual charity. Each Christmas, the entire force plays Santa Claus for the 20 or more children in the local orphanage. Early in the holiday season, letters are written by these children to Santa Claus in care of the car accountant, indicating just what they would like to have for Christmas. A committee of women employees buy just what the children

desire, with funds contributed by the clerks. The children are brought to the office in automobiles the day before Christmas and the presentation takes place. The accompanying illustration shows this year's tree.

NEWS of the WEEK

The Southern Pacific Gila River Bridge in Arizona

THE SENATE on January 4 confirmed the appointment of G. W. W. Hanger as a member of the United States Board of mediation for a new term.

THE NEW YORK, CHICAGO & ST. LOUIS has moved its general offices to the Terminal Tower building of the Union Station on the Public square, Cleveland, O.

THE INTERSTATE COMMERCE COMMISSION has granted the Delaware, Lackawanna & Western an extension of time from December 31 to July 1 in which to complete its installation of automatic train control under the commission's order.

C. M. MORGAN has been appointed member of the Mississippi Railroad Commission, to succeed Dean C. Holmes. Mr. Morgan served on the Commission in 1920-24.

THE WESTERN RAILWAY CLUB will devote its next regular monthly meeting, on December 16, at the Hotel Sherman, Chicago, to a consideration of air brake problems, the principal speakers being C. C. Farmer of the Westinghouse Air Brake Company and E. F. Wentworth of the New York Air Brake Company.

Chicago Meeting A. S. M. E.

The American Society of Mechanical Engineers, Chicago Section, will hold its next monthly meeting at 7:30 p. m. on January 20 at Fullerton Hall, the Art Institute, Chicago, and the entire program will be devoted to a consideration of railway subjects. Samuel O. Dunn, editor of the *Railway Age*, will discuss "Railway valuation as affecting the engineer", L. K. Sillcox, assistant to the president of the New York Air Brake Company, will present a paper on "the human element in railway work"; G. H. Roosevelt, railway division, General Electric Company, will consider "new motive power developments."

Railway Revenues and Expenses for November

Class I railroads in November had a net railway operating income of $86,424,299, or at the annual rate of 3.71 per cent on their property investment, according to reports compiled by the Bureau of Railway Economics. In November, 1926, this income was $119,940,803, or 5.29 per cent. Other comparisons appear in the following table:

Revenues and Expenses—November

	1926	1927
Total op. rev.	$ 503,819,802	$ 562,255,818
Total op. exp.	376,875,841	403,586,299
Taxes	31,237,545	35,136,149
Net ry. op. income.	86,424,299	119,940,803
Per cent exps.	74.80	71.78
Annual return, p. c.	3.71	5.29
Eleven months ended November 30		
Total op. rev.	$5,739,426,791	$5,937,601,742
Total op. exp.	4,249,320,864	4,319,707,413
Taxes	356,146,960	364,972,610
Net ry. op. income.	1,028,542,175	1,152,872,690
Per cent exps.	74.04	72.75
Annual return, p. c.	4.55	5.23

Net railway operating income by districts for the first eleven months of 1927, with the percentage of return based on property investment on an annual basis, was as follows:

New England Region	$ 39,273,397	4.67
Great Lakes Region	177,178,207	4.60
Central Eastern Region	223,291,884	4.77
Pocahontas Region	76,504,478	8.19
Total Eastern District	516,247,966	5.01
Total Southern District	127,805,448	4.55
Northwestern Region	113,526,717	3.60
Central Western Region	186,726,913	4.35
Southwestern Region	84,235,131	4.11
Total Western District	384,488,761	4.05
UNITED STATES	1,028,542,175	4.55

Thirty-one Class I roads were operated at a loss in November.

Railroads and Coal-Mine Wages

Senator Johnson of California introduced in the Senate on January 9 a resolution, S. J. Res. 105, directing the Senate committee on interstate commerce to make a "thorough and complete investigation of the conditions existing in the coal fields of central Pennsylvania, western Pennsylvania, West Virginia and Ohio," and to ascertain "whether the railroads are endeavoring to depress the labor cost of coal produced by union-mine labor." The resolution was referred to the committee. A complaint of this kind was recently placed before the President by officers of the miners' union, who said that the railroads had endeavored to depress the price of coal in the union mines by refusing to pay more for coal than the price they would obtain at southern non-union mines.

The resolution also calls for inquiry as to whether wage contracts in the coal fields have been abrogated or repudiated, whether women and children have been evicted from their homes "and generally what has transpired in said coal fields and the reasons for conditions and happenings therein."

The Canadian Roads in November

Gross earnings by the Canadian National of $266,000,000 for 1927 were predicted in a recent address by the President, Sir Henry Thornton. In his address Sir Henry said, in part:

"Based on the experience of eleven months it is estimated that the gross earnings of the National system for 1927 will approximate $267,000,000, this figure excluding earnings on lines east of Levis and Diamond Junction, Quebec, which are now separated under the provisions of the Maritime Freight Rates Act, 1927. On this basis the net earnings for 1927 have been placed at $45,500,000, or more than enough to again meet the interest on the funded debt in the hands of the public."

Both the Canadian Pacific and the Canadian National showed increases in gross earnings in November but operating costs on both roads showed larger increases.

The gross earnings of the Canadian National for the month of November, 1927, amounted to $23,699,965, as compared with $23,501,587 for November, 1926, an increase in November, 1927, of $198,378, equal to 0.84 per cent. During November last, operating expenses amounted to $16,922,632, as against $16,310,330 in November, 1926, an increase of $612,302, equal to 3.75 per cent.

Net earnings during November last totaled $6,777,332, while in November, 1926, they amounted to $7,191,256, a decrease of $413,924, equal to 5.76 per cent.

The operating ratio in November, 1927, was 71.40 per cent.

The operating ratio for the eleven months of 1927 was 83.52 per cent.

The figures quoted in the foregoing exclude all lines in Canada east of Levis and Diamond Junction, as from July 1 last, under the provisions of the Maritime Freight Rates' Act, and for the month of November last, exclude the figures of the Central Vermont Railway.

Net earnings of the Canadian Pacific for the month of November show a decrease of $373,929, when compared with

November of last year, gross earnings showing an increase of $469,635, while operating expenses were higher by $843,564. Gross earnings for the month under review amounted to $21,993,751, as against $21,524,116 in November of last year, while working expenses were $15,617,957, compared with $14,774,393 in the corresponding month of last year, leaving net profits at $6,375,793, compared with $6,749,722 in November, 1926. This was the seventh consecutive decline in monthly net earnings, and the eighth of the year to date.

For the eleven months of the year ended with November 30, net shows a decrease of $5,486,539, standing at $37,842,404, as compared with $43,328,944 in the corresponding eleven months of 1926. For the eleven month period, gross earnings show an increase of $2,144,889, while operating expenses are higher by $7,631,429.

Private Sidings in Illinois

An Illinois coal company built a track, about 3½ miles long, from its mine to the Big Four, and thereafter obtained from the Interstate Commerce Commission an order requiring the Big Four to construct and operate a connection (96 I. C. C. 143; 109 I. C. C. 55). The road brought suit in the federal district court for northern Illinois to set aside the order. The bill was dismissed without opinion and the railroad appealed. The Supreme Court of the United States has affirmed the decree, and because the railroad's contentions as to the invalidity of the order are peculiar in character and novel, has stated them in detail. Substantially, its ruling are as follows:

1. Paragraph 22, added to §1 of the Interstate Commerce Act by the Transportation Act, 1920, did not affect the power conferred on the Commission by paragraph 9 to require the construction of a switch connection with a side track built by a shipper and located wholly within a state. Paragraph 22 refers to tracks built by the carrier as part of its railroad; paragraph 9 to switch connections with private sidings.

2. Neither the switch connection nor the shipper's track, nor both combined, constituted an extension within paragraphs 18 to 21 because the track crossed at grade the tracks of two other railroads making it physically possible for their trains to pass over the track.

3. The siding was not an extension under paragraphs 18 to 21 because, under the law of Illinois, all tracks which cross highways are deemed public tracks, and this track crosses highways.

4. The declaration of the state court that the track which the federal authority determines is private shall be deemed public cannot affect the validity of the Commission's order.

5. The coal company is no less a "shipper" within paragraph 9 because its mine was already connected with the Illinois Central. A shipper may have a direct connection with more than one railroad.

6. The contention that no one unless he is already a shipper at the time of the application to the Commission, is entitled to a switch connection, was not sustained. The burden of building the side track is on the shipper; and the railroad cannot be ordered to build the switch until after the shipper has built the private siding.

7. It was not the duty of the Commission to determine, before issuing its order, whether or not the private track actually in existence had been constructed by the shipper *ultra vires*. "Whether in so acting the shipper transgressed state law (in building its track across highways) is a question which cannot be raised in this suit. If the state concludes to question the legality of the shipper's acts, it must do so in a direct proceeding instituted by it for that purpose." C. C. C. & St. L. v. United States. Decided January 3, 1928. Opinion by Mr. Justice Brandeis.

Engineers' Wages in Southeast

A hearing was begun on January 3 before a board of arbitration selected under the provisions of the railway labor act on a request for a general 15 per cent increase in wages for locomotive engineers on the southeastern railroads made several months ago by the Brotherhood of Locomotive Engineers. The board consists of Walter P. Stacey, chief justice of the supreme court of North Carolina, and Leslie M. Shaw, former Secretary of the Treasury, as neutral members selected by the Board of Mediation; J. J. Pelley, president of the Central of Georgia and W. J. Jenks, vice-president of the Norfolk & Western, selected by the southeastern railroads; and Alvanley Johnston, grand chief engineer, and S. H. Huff, assistant chief engineer, of the brotherhood, selected by the employees. The case for the employees was submitted by G. W. Laughlin, assistant grand chief of the brotherhood, while the railways were represented by Charles P. Neill, manager of the Bureau of Information of the Southeastern Railways.

In addition to the 15 per cent general increase the request calls for a differential of 25 cents a day in freight service for each 50,000 lb. of weight on drivers in excess of 350,000 and for Mallet rates for electric and three-cylinder locomotives. In outlining the justification for an increase Mr. Laughlin laid stress upon the years of training and the skill required of an engineer and the increased earning power and responsibility incident to the use of larger and more powerful locomotives and modern appliances, such as boosters, feedwater heaters and automatic train control. Mr. Laughlin also said it would be shown that more skill and training is required for service as a locomotive engineer than in any other trade.

The case for the employees consisted largely of testimony of individual engineers regarding their work and duties.

Testimony on behalf of the brotherhood was completed on January 11 with the introduction of statistics showing the wage scales in the building trades in cities of the Southeast. The first witness for the railways was A. J. Bier, secretary of the Bureau of Information of the Southeastern Railways, who read into the record quotations showing that the high wages of the building trades were largely due to the irregularity of employment.

W. W. Shelton, road foreman of engines on the Chesapeake & Ohio, testified regarding the steady improvement in locomotives and regarding the various appliances which he said have reduced both the work and responsibility of the engineer.

Many of those he mentioned were those that had been referred to by the engineers in their testimony as increasing the responsibility of the engineer, including feedwater heaters, mechanical lubricators, power reverse gear, outside valve gear, electric welding of flues, and superheaters. He also made the point that the increased proportion of double track reduces the engineer's responsiblity.

Payments to Labor Contractors Criticised

The Interstate Commerce Commission on January 10 made public a report, by Commissioner McManamy, finding that the practice of the Pittsburgh & Lake Erie in 1918 and later years of paying to labor contractors for their services in connection with the employment of maintenance of way laborers an allowance of 10 per cent of the monthly earnings of its track and roadway laborers, including supervisory and camp and commissary employees, "cannot be regarded as consistent with efficient and economical management." In conclusion the report says:

"The payment to a labor contractor of 10 per cent of the monthly earnings of its track and roadway laborers, including supervisory forces and camp and commissary help, as long as such employees remain in the service has not been justified on this record and has been shown to have resulted in substantially greater expenditures than would have been necessary had respondent handled this work with its own organization or in fact had the usual fees allowed labor agents for similar work been paid.

And it is significant that during the five-year period covered by this investigation the yearly average number of men on the contractors' rolls increased from 303 to 1125 and in percentage from 35 to 71, with a corresponding increase in the allowance to the contractor, whereas during the same period there was an equivalent decrease in the number of men actually carried on respondent's rolls although the record conclusively shows a substantially greater cost per effective labor hour for the men on the contractors' rolls.

Further, the practice of entering into verbal understandings covering such extensive operations and involving the expenditure of more than six millions of dollars, a substantial portion of which the contractors receive under cost-plus agreements, presents such a fertile field for excessive allowances, overcharges, duplication of charges, misunderstandings, and possible future litigation that it cannot be regarded as consistent with efficient and economical management. Whatever may have been the justification for such an arrangement in the beginning under conditions which then existed, the facts of record do not justify its continuance."

Commissioner Hall did not participate in the disposition of this case.

Revenues and Expenses of Railways

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1927

Name of road	Av. mileage operated during period.	Operating revenues—Freight.	Passenger.	Total (inc. misc.)	Operating expenses—Maintenance of—Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1926.
Akron, Canton & Youngstown	Nov. 171	$210,464	$238	$224,079	$34,229	$30,012	$11,619	$60,591	$12,917	$149,368	66.7	$74,711	$67,781	$37,893	$38,786
	11 mos. 171	2,803,718	3,514	2,935,999	431,776	344,539	127,217	831,847	157,767	1,891,798	64.4	1,044,201	891,123	543,433	400,745
	Nov. 9,449	14,448,800	2,618,503	18,592,239	2,217,318	3,331,020	419,338	4,614,864	403,689	10,842,968	58.3	7,749,271	5,838,890	6,075,871	6,831,219
	11 mos. 9,426	139,993,711	35,287,458	190,541,990	31,284,023	37,340,621	4,305,572	54,445,017	4,437,574	131,016,691	68.8	59,525,299	43,071,753	43,353,645	51,199,405
Atchison, Topeka & Santa Fe	Nov. 1,944	2,688,424	243,704	3,080,881	392,848	514,206	58,302	858,440	73,808	1,870,832	60.7	1,210,049	1,007,921	900,669	1,284,185
	11 mos. 1,944	27,544,211	2,601,254	31,643,467	5,555,450	6,199,685	599,170	10,125,626	788,093	23,075,436	72.9	8,568,031	7,260,475	5,556,424	5,919,892
	Nov. 964	1,155,194	121,667	1,355,236	180,402	253,260	13,319	387,034	29,435	820,280	60.5	534,956	457,718	384,091	300,387
	11 mos. 956	11,641,509	1,431,328	13,962,557	2,277,428	2,935,837	125,662	4,643,608	307,767	9,920,859	71.1	4,041,658	3,526,660	2,384,431	3,991,236
Gulf, Colorado & Santa Fe	Nov. 93	1,915,848	57,397	275,693	30,452	41,349	11,838	97,837	12,795	198,521	72.0	77,172	54,462	32,468	27,733
	11 mos. 93	19,321,631	673,233	2,942,759	330,007	494,323	128,460	1,057,706	149,734	2,210,872	75.1	731,887	543,451	370,553	389,488
	Nov. 133	2,015,443	54,053	271,938	34,708	48,298	12,455	95,423	15,084	210,019	77.2	61,919	45,649	39,536	61,135
	11 mos. 133	2,015,443	629,835	2,916,609	386,948	569,350	133,578	951,545	147,099	2,224,252	76.6	682,357	509,939	537,782	642,014
Panhandle & Santa Fe	Nov. 184,436	29,323	423,980	101,631	88,521	16,752	414,011	97.6	9,969	278,640	83,497	60,962	—4,218	—21,796	5,540
	11 mos. 184,436	386,598	4,845,810	1,158,751	922,156	198,179	4,567,170	94.2	1,044,067	14,840,900	758,753	492,268	121,411	—42,485	172,865
	Nov. 193,765	54,053	934,771	1,179,902	1,425,239	175,181	5,311,381	83.6			3,923,478	2,737,183	492,185	607,332	1,306,373
	11 mos. 193,765	629,835	6,355,448	11,933,032	15,655,105	1,950,272	59,010,715	79.9	9,300,853		3,045,612	47,512,278	9,672,169	15,899,949	
Atlanta & West Point	Nov. 133	353,592	386,598	934,771	6,355,448	1,179,902	15,655,105	1,796,802	6,597	191,238	69.6	76.9	43,639,747		
	11 mos. 133	2,015,443	4,001,863	4,935,738	73,851,615	11,933,032			75,757	2,519,238	76.3	3,923,478	46,286,956		
									729,213	15,003,872	74.9	57,363,313			
Western of Alabama	Nov. 639	4,001,863	934,771	13,759,220	20,525	48,080	6,882	109,214	6,597	191,238	69.6	76.9	10,794	110,349	116,930
	11 mos. 639	4,935,738	13,759,220	73,851,615	11,933,032	15,655,105	1,796,802	7,031,054	729,213	15,003,872	74.9	57,363,313	46,286,956	43,639,747	
	Nov. 5,099	54,104,968	13,023	274,795	495,740	3,780,999	440,923	1,247,229	75,757	2,519,238	79.3	3,923,478	10,794	110,349	1,249,707
	11 mos. 5,076	54,104,968	13,759,220	73,851,615	11,933,032	15,655,105	1,796,802	7,031,054	729,213	15,003,872	74.9	57,363,313	46,286,956	43,639,747	
Atlanta, Birmingham & Coast	Nov. 342	251,979	13,023	274,795	20,525	48,080	6,882	109,214	6,597	191,238	69.6	76.9	10,794	110,349	116,930
	11 mos. 342	2,977,871	177,628	3,277,991	620,008	495,740	80,510	1,247,229	75,757	2,519,238	79.3	3,923,478	1,124,503	1,124,503	1,249,707
	Nov. 5,642	24,591,381	1,945,771	18,927,350	2,850,746	3,780,999	440,923	7,031,054	729,213	15,003,872	74.9	57,363,313	31,777	1,124,503	1,249,707
	11 mos. 5,642	189,462,711	24,136,056	228,204,677	28,212,834	47,246,974	5,141,738	80,264,023	7,932,137	170,841,364	74.9	57,363,313	330,303	1,124,503	1,249,707
Atlantic Coast Line	Nov. 2,113	46,131,492	16,993,157	71,595,109	10,853,232	13,672,432	1,697	40,587	7,622	126,149	105.2	—6,187	—48,091	2,938	24,667
	11 mos. 2,112	46,131,492	16,993,157	71,595,109	10,853,232	13,672,432	867,189	8,471	2,397,627	55,238,567	77.2	16,356,542	13,065,692	10,346,946	12,240,461
	Nov. 9	1,261,960		1,329,998	116,184	144,635	5,604	501,282	46,005	839,680	63.1	45,079	416,069	39,197	41,758
	11 mos. 9	1,261,960		1,329,998	116,184	144,635	5,604	501,282	46,005	839,680	63.1	45,079	416,069	39,197	494,315
Charleston & Western Carolina	Nov. 342	2,977,871	1,945,771	18,927,350	2,850,746	3,780,999	440,923	7,031,054	729,213	15,003,872	74.9	57,363,313	31,777	1,124,503	1,249,707
	11 mos. 342	2,977,871	1,945,771	18,927,350	2,850,746	3,780,999	440,923	7,031,054	729,213	15,003,872	74.9	57,363,313	31,777	1,124,503	1,249,707
	Nov. 5,642	189,462,711	24,136,056	228,204,677	28,212,834	47,246,974	5,141,738	80,264,023	7,932,137	170,841,364	74.9	57,363,313	330,303	1,124,503	1,249,707
	11 mos. 5,642	189,462,711	24,136,056	228,204,677	28,212,834	47,246,974	5,141,738	80,264,023	7,932,137	170,841,364	74.9	57,363,313	330,303	1,124,503	1,249,707
Baltimore & Ohio	Nov. 75														
	11 mos. 75			3,665,567	346,109	24,454	2,657	41,041	15,751	138,063	67.9	185,080	138,063	159,704	147,577
	Nov. 23	126,182	113,246	267,933	430,968	41,041	25,734	1,840,808	16,057	2,946,980	65.9	2,304,070	1,747,074	1,973,162	1,764,561
	11 mos. 23	1,239,479	1,399,572	3,037,624	33,615	420,644	2,222	108,227	171,876	2,071,622	68.2	185,941	137,836	144,364	181,181
					428,995	220,810	22,407	1,227,534			65.6	2,379,227	1,852,031	1,567,055	1,870,897
Baltimore & Ohio Chicago Term	Nov. 75								26,780	391,875	67.9				
	11 mos. 75				24,454	41,041	5,647	146,158	274,974	4,457,400	65.9	2,304,070	137,836	146,576	309,807
	Nov. 23	126,182	113,246	267,933	430,968	41,041	65,526	1,697,838	274,974	4,457,400	70.8	185,941	1,747,074	3,708,856	6,028,060
	11 mos. 23	1,239,479	1,399,572	3,037,624	33,615	420,644	2,222	108,227	16,384	451,617	65.6	2,379,227	137,836	16,575	50,734
					428,995	220,810	22,407	1,227,534	115,613	4,544,850			1,852,031	178,916	231,916
Baltimore & Ohio Chicago Term	Nov. 75														
	11 mos. 75				99,452	111,193	5,647	146,158	26,780	391,875	67.9				
	Nov. 23	126,182	113,246	267,933	1,150,312	1,233,408	65,526	1,697,838	274,974	4,457,400	70.8	185,941	133,624	146,576	309,807
	11 mos. 23	1,239,479	1,399,572	3,037,624	56,884	71,659	3,651	303,039	16,384	451,617	65.6	2,379,227	3,391,264	3,708,856	6,028,060
					616,453	722,946	38,855	3,050,983	115,613	4,544,850			—507	16,575	50,734
Staten Island Rapid Transit	Nov. 613	502,115	48,160	576,955									178,916		231,916
	11 mos. 613	5,847,442	619,591	6,761,470	99,452	111,193	5,647	146,158	30,234	722,139	84.4	133,201			
	Nov. 32			637,558	1,150,312	1,233,408	65,526	1,697,838	371,138	8,820,252	68.6	4,037,475	133,624	146,576	309,807
	11 mos. 32		6,924,077		56,884	71,659	3,651	303,039	5,029	29,936	77.8	8,518	3,391,264	3,708,856	6,028,060
					616,453	722,946	38,855	3,050,983	372,563	82.7		78,077	—507	16,575	50,734
Bangor & Aroostook	Nov. 613	502,115	48,160	576,955									—2,645	178,916	231,916
	11 mos. 613	5,847,442	619,591	6,761,470	99,452	111,193	5,647	146,158	30,234	722,139	84.4	133,201			
	Nov. 32			637,558	1,150,312	1,233,408	65,526	1,697,838	371,138	8,820,252	68.6	4,037,475	133,624	146,576	309,807
	11 mos. 32		6,924,077		56,884	71,659	3,651	303,039	5,029	29,936	77.8	8,518	3,391,264	3,708,856	6,028,060
					616,453	722,946	38,855	3,050,983	372,563	82.7		78,077	—507	16,575	50,734
Belt Ry. Co. of Chicago	Nov. 227	831,887	8,927	855,340	99,878	307,681	14,196	267,577	30,234	722,139	84.4	133,201	—2,645	178,916	231,916
	11 mos. 227	12,505,560	130,068	12,857,727	1,276,588	3,551,570	163,694	3,551,257	371,138	8,820,252	68.6	4,037,475	133,624	146,576	309,807
	Nov. 33	437,550		38,454	8,880	4,645	1,359	9,914	5,029	29,936	77.8	8,518	3,391,264	3,708,856	6,028,060
	11 mos. 33	437,550		450,640	95,214	96,032	15,635	109,991	54,455	372,563	82.7	78,077	—507	16,575	50,734
													178,916		231,916
Bessemer & Lake Erie

Revenues and Expenses of Railways

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1927—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1926.
Chicago, Burlington & Quincy	Nov.	9,389	$11,039,386	$1,595,195	$13,954,044	$2,188,542	$2,692,493	$248,440	$4,522,041	$348,296	$10,031,223	71.9	$3,922,821	$2,966,135	$2,450,842	$2,832,603
	11 mos.	9,391	108,299,671	20,329,594	142,851,994	20,640,801	23,287,347	2,896,033	48,612,168	4,023,387	100,169,695	70.1	42,682,299	31,539,056	27,469,333	28,076,667
Chicago Great Western	Nov.	1,496	1,666,139	240,577	2,084,257	299,396	391,161	73,541	862,917	55,076	1,691,737	81.2	392,520	299,916	133,665	103,571
	11 mos.	1,496	17,810,949	2,959,777	22,585,664	3,181,801	4,311,657	858,767	9,083,273	622,191	18,181,198	80.5	4,404,466	3,452,488	1,885,501	2,296,529
Chicago, Indianapolis & Louisville	Nov.	650	1,011,815	184,405	1,330,698	148,218	321,063	38,334	542,981	35,201	1,098,704	82.6	231,994	207,413	103,783	228,718
	11 mos.	650	13,201,155	2,304,659	17,192,451	1,666,006	3,533,706	432,796	6,251,570	400,789	12,421,050	72.2	4,771,401	3,919,340	2,741,259	2,752,571
Chicago, Milwaukee & St. Paul	Nov.	11,208	11,125,332	1,452,402	13,903,742	2,070,035	2,668,730	291,513	5,111,864	395,089	10,631,560	76.5	3,272,182	2,569,192	2,025,382	2,229,711
	11 mos.	11,204	118,589,623	17,412,133	150,459,521	26,401,154	31,990,044	3,524,017	55,236,017	4,210,657	122,194,345	81.2	28,265,176	20,124,878	14,088,606	17,532,653
Chicago River & Indiana	Nov.	19	.....	.....	577,009	51,538	75,216	800	218,000	13,577	359,131	62.2	217,878	173,315	273,476	311,399
	11 mos.	19	.....	.....	6,299,803	636,968	851,760	9,177	2,384,989	167,030	4,049,924	64.3	2,249,879	1,776,661	2,993,360	3,015,498
Chicago, Rock Island & Pacific	Nov.	7,575	8,326,078	1,631,020	10,973,241	1,441,014	2,075,509	244,364	3,814,202	302,930	7,844,818	71.5	3,128,423	2,461,121	2,133,772	1,964,953
	11 mos.	7,568	92,165,401	20,047,378	122,610,591	16,291,527	24,845,667	2,549,718	44,422,243	3,424,772	91,207,331	74.4	31,403,260	24,379,389	19,700,192	18,594,004
Chicago, Rock Island & Gulf	Nov.	507	536,687	64,856	641,939	77,175	60,163	19,079	200,276	17,198	376,086	58.6	265,853	238,357	221,530	191,646
	11 mos.	479	5,258,808	850,137	6,590,424	1,158,251	818,611	220,494	2,340,596	192,635	4,671,246	70.9	1,919,178	1,642,675	1,337,888	1,716,796
Chic., St. Paul, Minn. & Omaha	Nov.	1,746	1,657,285	299,548	2,128,252	336,711	411,376	31,024	947,212	75,841	1,808,052	85.0	320,200	223,751	118,015	352,863
	11 mos.	1,746	18,554,654	4,215,690	24,664,630	3,957,242	4,498,697	382,070	10,113,538	837,154	19,880,156	80.6	4,784,474	3,534,587	2,570,238	2,839,347
Clinchfield Railroad	Nov.	309	600,752	18,031	630,710	55,829	149,901	22,196	123,297	18,085	369,081	58.5	261,629	161,430	230,954	267,211
	11 mos.	309	6,957,094	259,612	7,357,141	868,167	1,858,383	251,635	1,503,391	211,539	4,691,529	63.8	2,665,612	1,790,268	3,078,684	3,308,941
Colorado & Southern	Nov.	1,054	977,578	85,867	1,152,524	264,022	231,942	15,593	367,941	39,135	917,486	79.6	235,038	170,806	157,954	283,473
	11 mos.	1,054	9,685,332	1,275,085	11,960,987	2,389,373	2,614,475	166,954	4,050,511	474,256	9,769,358	81.7	2,191,629	1,482,290	1,315,133	1,623,373
Ft. Worth & Denver City	Nov.	491	847,782	191,284	1,105,932	141,520	183,048	16,423	301,927	35,260	700,161	63.3	405,771	359,653	367,478	544,906
	11 mos.	491	8,333,583	2,290,150	11,455,140	2,052,778	1,846,033	206,537	3,343,404	427,738	7,846,060	68.5	3,609,080	3,059,054	2,906,263	3,904,605
Wichita Valley	Nov.	271	227,055	18,708	256,144	21,092	7,074	67	54,611	1,458	84,264	32.9	171,880	154,270	103,472	113,877
	11 mos.	271	1,453,333	185,081	1,729,669	310,566	100,994	438	501,181	21,817	933,789	54.0	795,880	692,016	452,341	375,502
Columbus & Greenville	Nov.	167	150,713	24,807	183,350	35,528	21,789	3,120	55,034	9,837	125,306	68.3	58,044	50,181	29,339	26,996
	11 mos.	167	1,413,289	234,846	1,724,186	496,947	205,959	38,353	579,416	124,967	1,425,185	82.7	299,001	266,655	74,066	149,563
Conemaugh & Black Lick	Nov.	23	65,115	.....	119,124	10,354	30,976	942	74,849	3,121	120,242	100.9	—1,118	—2,318	—5,027	—1,644
	11 mos.	23	911,043	.....	1,567,132	209,759	341,199	11,448	924,833	34,438	1,521,677	97.1	45,455	32,255	37,814	51,879
Delaware & Hudson	Nov.	881	3,073,825	239,135	3,528,569	556,070	979,281	52,065	1,236,995	161,899	3,002,342	85.1	526,227	409,227	445,998	820,914
	11 mos.	881	33,601,276	3,315,499	39,527,494	5,192,358	10,406,719	588,392	13,732,012	1,609,431	31,730,540	80.3	7,796,954	6,509,390	6,435,986	9,771,779
Delaware, Lackawanna & Western	Nov.	999	5,331,846	970,872	7,073,305	516,896	1,248,989	134,231	2,757,414	179,857	4,887,243	69.1	2,186,062	1,517,279	1,540,429	1,806,644
	11 mos.	999	57,104,649	11,938,532	78,237,246	7,594,634	13,479,224	1,498,763	30,300,142	1,959,441	55,389,839	70.8	22,847,407	15,881,417	16,193,746	18,027,617
Denver & Rio Grande Western	Nov.	2,560	2,669,090	245,365	3,130,577	524,854	498,439	54,862	966,111	85,921	2,149,022	68.6	981,485	740,968	747,360	727,578
	11 mos.	2,551	24,125,347	3,819,668	30,306,833	6,245,142	5,524,724	630,019	9,189,888	966,248	22,953,763	75.7	7,353,070	5,209,227	5,899,472	7,205,093
Denver & Salt Lake	Nov.	255	281,590	22,861	324,317	67,343	91,291	1,779	76,015	8,833	245,261	75.6	79,056	72,805	64,992	82,122
	11 mos.	255	3,164,564	274,528	3,683,285	1,060,675	1,117,484	19,710	817,284	95,570	3,096,447	84.1	586,838	508,376	544,682	372,316
Detroit & Mackinac	Nov.	315	101,903	9,622	120,684	42,691	25,746	1,856	45,783	5,095	117,681	97.5	3,003	—6,972	—2,787	146
	11 mos.	359	1,245,290	152,830	1,530,510	343,266	284,420	22,644	513,945	59,356	1,180,077	77.1	350,433	238,543	281,535	145,558
Detroit & Toledo Shore Line	Nov.	50	323,688	.....	328,947	56,528	35,112	3,358	87,226	14,722	196,946	59.9	132,001	102,429	28,650	116,292
	11 mos.	50	4,334,520	.....	4,388,053	643,612	370,580	38,336	1,065,665	92,400	2,210,593	50.4	2,177,460	1,848,544	905,973	970,905
Detroit Terminal	Nov.	19	.....	.....	112,454	39,318	17,250	.....	71,937	4,066	132,571	117.9	—20,117	—24,153	—23,579	24,195
	11 mos.	19	.....	.....	1,860,709	222,075	169,899	49	896,496	43,896	1,332,415	71.6	528,294	369,773	417,495	403,981
Detroit, Toledo & Ironton	Nov.	495	566,693	3,811	581,649	115,386	141,085	12,420	245,862	27,570	534,557	91.9	47,092	16,729	—40,431	142,594
	11 mos.	495	7,820,397	58,814	8,039,954	1,440,613	1,619,776	150,244	2,812,382	425,681	6,380,783	79.4	1,659,171	1,264,433	582,184	2,126,828
Duluth & Iron Range	Nov.	274	101,037	5,079	128,658	67,743	104,289	1,610	95,055	16,320	284,769	221.3	—156,111	—170,469	—168,068	—86,348
	11 mos.	274	5,713,826	65,492	6,570,889	1,128,727	1,229,212	20,909	1,754,144	225,629	4,359,255	66.3	2,211,634	1,665,523	1,694,022	2,252,035
Duluth, Missabe & Northern	Nov.	306	229,554	4,988	270,058	113,243	146,650	3,136	165,172	22,174	450,283	166.7	—180,225	—260,994	—287,890	—136,782
	11 mos.	306	13,805,217	63,087	15,755,245	1,932,539	2,195,382	34,829	2,950,818	256,633	7,369,534	46.8	8,385,711	6,530,755	6,472,543	8,562,054
Duluth, Winnipeg & Pacific	Nov.	178	173,162	20,645	207,096	25,819	50,280	4,589	76,704	8,003	167,099	80.4	39,997	29,640	31,706	37,129
	11 mos.	178	2,027,859	206,159	2,340,526	438,095	540,865	51,610	779,059	89,184	1,920,870	82.1	419,656	303,512	338,883	209,188
Elgin, Joliet & Eastern	Nov.	460	1,559,671	24	1,739,771	173,606	479,657	13,386	662,790	46,724	1,377,119	79.2	362,656	220,447	103,859	372,371
	11 mos.	460	20,739,393	123	22,579,163	2,307,965	4,730,517	156,161	7,849,075	553,041	15,572,734	69.0	7,006,429	5,822,305	4,244,588	5,472,527
Erie Railroad	Nov.	2,047	6,802,040	867,424	8,480,720	1,270,139	2,190,275	164,359	3,666,695	296,911	7,629,634	90.0	851,086	542,792	454,593	1,623,075
	11 mos.	2,047	81,153,445	10,736,043	100,348,443	12,719,639	24,989,943	1,697,546	40,099,243	3,243,319	83,210,107	82.9	17,138,336	13,148,396	12,935,524	15,286,483
Chicago & Erie	Nov.	269	1,167,339	39,796	1,306,633	130,846	131,682	24,544	376,534	45,939	709,326	54.3	597,307	573,643	197,718	68,282
	11 mos.	269	11,267,999	585,229	12,933,252	1,528,254	1,423,222	269,144	4,149,891	463,334	7,831,845	60.6	5,101,407	4,529,580	768,953	1,403,360
New Jersey & New York	Nov.	45	29,297	95,540	130,082	13,673	36,087	1,411	72,137	3,497	126,783	97.5	3,299	—1,145	—34,635	—28,942
	11 mos.	45	328,901	1,077,020	1,463,369	193,265	258,398	17,790	816,567	44,109	1,329,969	90.9	133,400	92,957	—271,406	—194,449
N. Y., Susquehanna & Western	Nov.	134	320,203	44,449	403,701	97,255	63,950	4,869	204,211	11,424	381,563	94.5	22,138	—5,064	—18,801	57,789
	11 mos.	134	3,560,967	542,678	4,562,526	592,901	696,543	54,675	2,280,445	131,103	3,755,252	82.3	807,274	494,270	245,159	477,906

Revenues and Expenses of Railways

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1927—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1926.
Evansville, Indianap. & Terre Haute	Nov.	146	155,488	3,945	164,523	$22,014	$25,606	$2,438	$64,660	$5,953	$121,900	74.1	$42,623	$38,773	$5,670	$73,795
	11 mos.	146	2,239,139	54,822	2,364,573	297,823	307,176	24,557	840,504	76,325	1,573,200	66.5	791,373	717,367	233,086	337,159
Florida East Coast	Nov.	857	700,718	258,523	1,081,069	292,336	209,618	36,041	408,884	52,180	1,005,357	93.0	75,712	—121,509	—179,060	354,025
	11 mos.	850	10,059,046	4,630,144	16,479,500	3,557,569	2,749,298	354,136	5,940,246	577,290	13,317,292	80.8	3,162,208	1,666,709	456,811	4,741,533
Fort Smith & Western	Nov.	249	120,731	11,886	139,573	30,822	30,207	5,694	47,938	7,161	121,263	86.9	18,310	12,810	3,647	39,926
	11 mos.	249	1,305,736	134,994	1,520,012	323,990	329,743	60,414	531,901	82,962	1,322,069	87.0	197,943	139,094	18,908	96,814
Galveston Wharf	Nov.	13	.....	.....	157,561	53,456	3,731	1,852	31,873	5,246	106,602	67.7	50,959	24,459	24,545	96,985
	11 mos.	13	.....	.....	1,815,084	570,520	50,346	21,185	368,393	42,318	1,206,228	66.5	608,856	374,356	374,155	431,847
Georgia R. R.	Nov.	328	350,717	63,193	447,157	48,871	82,605	23,405	202,944	24,223	382,278	85.5	64,879	54,119	72,140	95,573
	11 mos.	328	4,124,919	782,222	5,258,444	543,243	956,667	259,780	2,248,992	258,777	4,255,660	80.9	1,002,784	857,107	997,903	1,036,318
Georgia & Florida	Nov.	445	105,426	12,347	125,713	21,927	25,056	9,413	54,562	8,219	119,396	95.0	6,317	—3,184	—662	13,741
	11 mos.	445	1,477,356	173,641	1,737,134	309,390	255,365	109,985	634,805	89,763	1,401,657	80.7	335,477	248,241	226,469	212,189
Grand Trunk Western	Nov.	347	1,307,406	159,682	1,553,634	166,166	365,605	40,570	547,608	72,502	1,182,628	76.1	371,006	286,692	165,567	249,629
	11 mos.	347	16,338,500	2,085,280	19,379,738	2,310,563	4,092,555	462,407	6,463,795	706,177	14,052,844	72.5	5,326,894	4,397,867	3,133,051	2,793,715
Atlantic & St. Lawrence	Nov.	166	180,985	17,047	224,405	53,379	45,040	6,031	143,430	8,565	257,832	114.9	—33,427	—45,926	—92,671	—63,020
	11 mos.	166	1,796,398	316,289	2,346,460	471,817	412,947	69,264	1,169,061	92,882	2,231,148	95.1	115,312	—24,857	—670,080	—560,815
Chic., Det. & Canada Gr. Tr. Jct.	Nov	59	234,472	2,935	274,331	29,387	16,310	4,701	100,700	4,712	155,727	56.8	118,604	108,199	75,053	20,978
	11 mos.	59	3,108,527	15,126	3,544,138	438,995	189,364	50,509	1,110,946	48,788	1,837,128	51.8	1,707,010	1,592,743	1,232,384	1,074,061
Detroit, Grand Haven & Mil.	Nov.	189	459,786	21,893	535,745	59,835	60,122	13,031	263,983	21,789	418,145	78.0	117,600	104,665	195	278,858
	11 mos.	189	6,728,951	313,720	7,612,161	986,708	668,085	143,957	2,914,425	208,887	4,910,638	64.5	2,701,523	2,557,088	1,394,202	1,793,733
Great Northern	Nov.	8,163	10,427,156	990,356	12,224,036	1,017,498	1,846,106	207,432	3,398,595	214,249	6,688,303	54.7	5,535,733	4,624,007	4,454,103	4,673,515
	11 mos.	8,164	88,712,935	11,548,752	110,126,719	14,045,152	18,264,244	2,403,560	34,382,139	2,430,588	72,166,363	65.5	37,960,356	28,595,522	27,362,389	29,561,712
Green Bay & Western	Nov.	234	127,306	4,076	138,132	22,339	21,859	5,346	46,784	2,866	99,178	71.8	38,954	28,954	27,305	33,665
	11 mos.	234	1,319,094	63,048	1,452,574	295,949	235,191	50,322	537,564	30,354	1,148,785	79.0	303,789	213,788	201,408	238,482
Gulf & Ship Island	Nov.	307	210,283	33,712	262,290	76,640	60,698	5,170	112,248	7,781	265,239	101.1	—2,949	—31,754	—46,404	—57,384
	11 mos.	307	2,806,638	433,091	3,490,103	1,222,978	630,763	61,293	1,351,943	90,563	3,394,354	97.3	95,749	—176,481	—330,388	—951,668
Gulf, Mobile & Northern	Nov.	733	561,809	34,414	623,859	105,400	73,160	30,157	215,693	25,319	450,595	72.23	173,264	137,181	110,029	114,980
	11 mos.	709	6,055,125	375,666	6,694,874	1,204,318	1,014,659	332,146	2,004,823	303,955	4,863,092	72.64	1,831,782	1,404,985	1,133,039	1,426,025
Hocking Valley	Nov.	348	1,389,608	58,285	1,631,183	242,564	394,578	16,030	503,097	43,610	1,199,878	73.6	431,305	275,517	134,640	375,638
	11 mos.	348	17,274,345	730,347	19,951,684	2,275,440	4,132,747	181,560	5,512,205	485,777	12,587,436	63.1	7,364,248	5,954,612	4,847,852	4,050,494
Illinois Central	Nov.	4,914	9,326,375	1,787,535	11,986,151	1,586,181	3,275,211	236,026	4,511,495	341,431	10,020,236	83.6	1,965,915	1,338,264	1,374,188	2,381,618
	11 mos.	4,903	112,204,985	21,057,502	143,528,624	16,975,206	33,999,527	2,809,950	50,601,217	3,838,882	109,035,842	76.0	34,492,782	25,131,832	23,902,418	24,154,255
Yazoo & Mississippi Valley	Nov.	1,708	2,059,266	361,213	2,563,863	636,070	459,954	46,744	857,839	69,924	2,065,004	80.5	498,859	418,715	353,293	540,146
	11 mos.	1,709	19,752,982	3,535,937	24,860,575	5,845,294	4,548,817	531,930	9,022,376	801,784	20,796,097	83.7	4,064,478	2,229,404	1,541,096	3,426,647
Illinois Central System	Nov.	6,623	11,395,656	2,152,884	14,564,165	2,222,251	3,739,957	282,770	5,381,501	411,392	12,102,236	83.1	2,461,929	1,749,585	1,730,383	2,928,667
	11 mos.	6,612	132,065,818	24,640,279	168,544,006	22,820,500	38,619,490	3,341,880	59,734,450	4,641,244	130,014,520	77.1	38,529,486	27,280,635	25,496,792	27,656,226
Kansas City, Mexico & Orient	Nov.	272	233,555	8,095	252,988	257,355	173	10,019	79,949	9,041	351,546	139.0	—98,558	—104,775	—83,729	6,690
	11 mos.	272	2,590,783	75,479	2,764,211	937,251	572,098	96,473	1,092,309	112,671	2,804,737	101.5	—40,526	—88,617	43,087	52,240
Kans. City, Mex. & Orient of Tex.	Nov.	465	621,378	18,852	661,218	473,964	23,900	10,901	149,498	10,677	620,068	93.8	41,150	34,119	—30,645	64,827
	11 mos.	465	5,934,732	205,458	6,326,492	2,040,997	811,847	107,951	1,945,409	131,560	5,034,532	79.6	1,291,960	1,213,422	303,333	129,958
Kansas City Southern	Nov.	784	1,281,546	89,053	1,530,535	190,474	278,617	56,234	491,068	95,142	1,111,349	72.6	419,186	313,692	253,399	286,953
	11 mos.	784	14,645,891	1,194,928	17,589,308	1,968,788	2,926,921	581,242	5,425,677	946,497	11,829,326	67.3	5,759,982	4,541,573	3,904,127	3,909,131
Texarkana & Ft. Smith	Nov.	81	220,642	9,038	248,881	35,291	28,897	6,115	67,092	10,300	148,451	59.6	100,430	105,342	73,969	61,065
	11 mos.	81	2,442,052	106,540	2,756,905	411,149	291,365	70,789	791,445	115,026	1,693,857	61.4	1,063,048	917,804	531,739	734,811
Kansas, Oklahoma & Gulf	Nov.	326	271,770	4,037	281;628	75,185	23,624	10,931	68,147	8,718	181,727	64.5	99,901	90,131	70,082	2,609
	11 mos.	326	2,574,246	50,133	2,686,355	943,413	225,878	108,766	751,036	85,941	2,073,188	77.2	613,167	507,846	325,993	—392,707
Lake Superior & Ishpeming	Nov.	160	110,912	1,977	128,431	32,136	24,974	571	42,389	4,723	104,786	81.6	23,645	11,257	8,622	35,473
	11 mos.	160	1,954,574	25,467	2,271,285	381,460	285,891	6,277	532,958	54,905	1,261,285	55.5	1,010,000	750,091	721,469	772,243
Lake Terminal	Nov.	13	.....	.....	77,098	15,447	22,221	.....	50,416	1,937	90,021	116.8	—12,923	—30,423	—32,283	—13,346
	11 mos.	13	.....	.....	1,002,148	170,788	239,130	.....	609,781	20,571	1,040,270	103.8	—38,122	—95,355	—100,268	15,304
Lehigh & Hudson River	Nov.	96	263,362	1,136	273,958	38,317	37,807	2,552	97,161	10,496	186,307	68.0	87,651	69,764	44,872	77,974
	11 mos.	96	2,953,887	21,285	3,110,208	390,487	475,165	24,201	1,072,359	107,963	2,070,093	66 6	1,040,115	848,573	584,667	671,182
Lehigh & New England	Nov.	216	471,452	1,029	480,677	49,249	82,377	4,208	168,189	16,864	305,961	63.7	174,716	149,946	145,862	162,878
	11 mos.	216	5,334,281	12,750	5,442,009	587,093	1,146,060	59,926	1,771,732	182,061	3,721,616	68.4	1,720,393	1,475,678	1,385,159	1,613,671
Lehigh Valley	Nov.	1.363	5,122,497	536,087	6,060,544	544,409	1,448,585	140,780	2,595,251	141,275	4,903,881	80.9	1,156,663	880,126	674,866	912,869
	11 mos.	1,363	56,846,160	7,046,296	69,055,270	7,770,347	15,562,185	1,497,214	27,990,763	1,608,623	54,814,564	79.4	14,240,706	11,034,882	9,277,477	13,023,150
Louisiana & Arkansas	Nov.	302	276,934	11,822	296,771	42,296	55,884	11,132	83,159	11,876	204,071	68.8	92,700	59,698	47,944	49,219
	11 mos.	302	3,021,521	158,129	3,304,073	593,730	662,257	123,529	982,665	127,536	2,486,708	75.3	817,365	520,294	399,044	794,271
Louisiana Ry. & Nav. Co.	Nov.	337	278,274	10,057	299,755	52,069	36,328	14,160	121,284	9,977	229,043	76.4	70,712	48,712	16,479	—4,450
	11 mos.	337	2,686,221	137,344	2,993,215	651,695	378,951	138,096	1,258,224	109,162	2,505,385	83.7	487,830	242,217	—73,293	—14,972

Revenues and Expenses of Railways

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1927—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1926.
						Maintenance of										
			Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Louisiana Ry. & Nav. Co. of Tex.	Nov.	206	$96,045	$4,867	$104,419	$16,300	$15,426	$3,181	$38,316	$5,410	$78,629	75.3	$25,790	$21,711	$8,831	—$1,712
	11 mos.	206	934,242	50,604	1,025,169	235,565	148,585	35,256	438,320	66,212	923,664	90.1	101,505	56,703	—92,388	—92,507
Louisville & Nashville	Nov.	5,064	9,062,284	1,437,376	11,166,558	1,726,460	2,565,774	285,588	4,043,106	340,363	8,994,340	80.5	2,172,218	1,519,091	1,422,164	2,100,375
	11 mos.	5,063	108,114,230	18,306,851	133,853,619	20,332,185	29,962,614	2,857,933	46,470,285	3,709,677	103,760,516	77.5	30,093,103	23,042,173	22,827,175	25,651,953
Louisville, Henderson & St. Louis	Nov.	199	241,021	40,358	296,659	50,973	46,044	8,547	106,635	11,755	225,959	76.1	70,700	50,111	40,377	57,089
	11 mos.	199	3,078,157	543,871	3,816,590	672,752	572,318	94,432	1,245,490	134,029	2,725,867	71.4	1,090,723	849,156	746,303	567,173
Maine Central	Nov.	1,121	1,275,267	230,384	1,654,374	262,077	332,364	15,133	685,951	51,027	1,346,456	81.4	307,918	193,201	160,690	283,434
	11 mos.	1,121	13,584,729	3,332,770	18,664,346	2,985,607	3,520,624	171,709	7,449,069	605,497	14,749,855	79.0	3,914,491	2,658,650	2,371,755	2,938,694
Midland Valley	Nov.	364	307,110	19,887	339,095	48,326	42,092	7,559	80,517	13,665	189,476	55.9	149,619	132,817	104,457	127,081
	11 mos.	364	3,250,878	288,620	3,667,417	602,807	402,857	81,997	924,461	169,854	2,175,553	59.3	1,491,864	1,286,224	1,048,238	1,230,103
Minneapolis & St. Louis	Nov.	1,627	1,116,392	72,395	1,254,320	120,045	263,255	34,191	553,325	43,041	1,012,825	80.7	241,485	181,473	110,168	83,118
	11 mos.	1,627	11,682,080	942,789	13,327,092	2,100,815	2,887,666	391,157	5,928,813	496,476	11,793,247	88.5	1,533,845	885,597	265,092	257,654
Minneapolis, St. Paul & S. S. Marie	Nov.	4,396	3,674,812	364,610	4,334,093	492,484	736,761	70,406	1,598,107	109,286	3,022,250	69.7	1,311,843	1,039,242	787,613	942,032
	11 mos.	4,396	36,928,136	5,121,629	45,590,477	6,040,714	8,029,876	820,612	16,420,352	1,243,705	32,792,050	71.9	12,798,427	9,982,742	8,386,900	6,583,229
Duluth, South Shore & Atlantic	Nov.	583	269,570	55,932	357,725	48,349	60,665	7,794	161,837	10,134	293,433	82.0	64,292	32,292	21,997	27,011
	11 mos.	589	3,653,576	710,878	4,802,298	822,805	749,841	85,177	1,955,293	122,816	3,786,071	78.8	1,016,227	676,211	518,583	365,474
Spokane International	Nov.	165	80,344	13,779	101,204	18,197	6,748	4,259	30,413	6,081	66,876	66.0	34,358	28,739	19,254	20,704
	11 mos.	165	953,144	118,093	1,146,184	199,527	89,009	41,103	354,398	71,807	768,774	67.1	377,410	317,855	225,440	266,217
Mississippi Central	Nov.	161	120,449	8,381	133,095	19,129	26,173	8,933	34,170	7,878	96,206	72.3	36,889	28,241	29,912	40,817
	11 mos.	161	1,372,776	101,598	1,524,944	239,644	294,208	94,990	401,642	86,003	1,116,333	73.2	408,611	310,006	346,004	395,891
Missouri & North Arkansas	Nov.	364	113,441	12,586	135,296	45,880	10,715	10,143	58,796	9,555	135,089	99.9	207	—2,143	—13,838	8,468
	11 mos.	364	1,295,647	159,100	1,559,006	452,174	176,750	107,815	597,044	88,471	1,421,928	91.2	137,078	110,292	—9,094	—137,747
Missouri-Kansas-Texas	Nov.	1,799	2,477,743	299,395	3,025,837	387,225	670,737	56,505	725,193	89,973	1,914,633	63.3	1,111,204	874,693	889,627	1,111,606
	11 mos.	1,799	26,486,695	3,641,812	32,510,451	4,587,691	6,980,947	713,026	8,228,574	1,052,666	21,597,310	66.4	10,913,141	8,612,490	8,577,343	8,739,412
Missouri-Kansas-Texas of Texas	Nov.	1,389	1,447,048	298,898	1,905,640	344,354	259,048	55,314	711,519	64,804	1,416,054	74.3	489,586	437,518	270,709	431,083
	11 mos.	1,389	14,173,644	3,516,143	19,295,948	2,958,511	2,691,573	560,996	7,566,810	721,844	14,575,658	75.5	4,720,290	4,115,636	2,314,357	2,981,917
Missouri Pacific	Nov.	7,384	8,784,803	1,111,850	10,771,050	1,940,817	1,764,827	307,081	3,824,469	351,670	8,224,583	76.4	2,546,462	2,139 065	1,794,149	1,854,463
	11 mos.	7,357	92,682,715	13,437,094	115,514,491	19,467,637	21,962,846	3,141,532	42,296,241	3,912,862	90,827,521	78.6	24,686,970	20,106,717	15,977,728	18,749,737
Gulf Coast Lines	Nov.	1,005	1,007,833	130,922	1,213,890	283,690	230,933	36,050	413,299	56,220	1,021,245	84.13	192.645	132,634	112,456	142,722
	11 mos.	992	11,736,103	1,710,880	14,270,550	2,846,042	2,483,141	434,896	4,548,421	615,483	10,914,812	76.48	3,355,738	2,676.038	2,048,645	3,271,963
International-Great Northern	Nov.	1,159	1.283,724	204,705	1.617,910	328,794	306,005	40,752	621,309	61,868	1,363,435	84.27	254,475	213,230	148,256	222,449
	11 mos.	1,159	13,258,825	2,196,446	16,932,486	2,966,596	2,980,248	405,278	6,723,729	693,340	13,634,250	80.52	3,298,236	2,835,131	2,103,337	2,333,209
San Antonio, Uvalde & Gulf	Nov.	318	112,969	16,645	142,102	30,365	22,630	4,622	59,886	6,728	124,912	87.9	17,190	13,674	—6,319	—10.880
	11 mos.	318	1,421.523	220,309	1,784,404	361,669	245,494	56,007	618,566	69,293	1,350,974	75.7	433,430	393,557	113,540	235,056
Texas & Pacific	Nov.	2.015	2,970,000	473,210	3,689,020	611,466	562,596	76,112	1,110,607	73,528	2,434,405	66.0	1,254,615	1,098,879	910.201	748,392
	11 mos.	1,977	27,605,239	5,099,684	35,038,953	6,185,010	6,214,313	805,110	11,751,808	1,073,805	26,082,516	74.4	8,956,437	7,237,599	5,606,702	5,505,021
Mobile & Ohio	Nov.	1,161	1,252,947	100,226	1,428,901	226,070	245,208	55,672	539,060	52,328	1,098,236	76.9	330,665	233,405	191,297	298,311
	11 mos.	1,161	14.600,171	1,188.930	16,704,514	2,482,762	2,958,983	592,463	6,055,658	519,401	12,586,845	75.3	4,117,669	3,117,780	2,688,294	3,203,533
Monongahela	Nov.	171	547,109	20,900	573,727	85,000	75,000	1,242	150,554	10,540	321,163	56.0	252,564	231,930	147,403	223,342
	11 mos.	171	6,845,730	261,072	7,179,272	885,000	795,000	11,595	1,807,950	111,144	3,600,411	50.2	3,578,861	3,251,268	2,144,299	2,073,259
Monongahela Connecting	Nov.	7	.....	.....	127,367	15,562	27,612	376	60,807	2,916	107,273	84.2	20,094	14,026	12,864	29,908
	11 mos.	7	.....	.....	1,785,792	195,465	344,817	4,143	785,633	34,725	1,364,783	76.4	421,009	326,875	305,302	419,234
Montour	Nov.	57	106.202	95	106,667	32,538	55,486	1,145	25,783	6,631	121,583	114.0	—14,916	20,936	50,293	29,919
	11 mos.	57	1,187,934	2,378	1,197,089	312,286	492,356	13,283	259,630	88,466	1,165,232	97.3	31,857	14,705	366,772	276,417
Nashville, Chattanooga & St. Louis	Nov.	1,259	1.483.202	279,001	1,885,477	225,250	468,848	84,474	696,916	75,011	1,556,356	82.5	329,121	234,010	246,910	414,941
	11 mos.	1,259	15,905,907	3,537,548	21,187,258	2,910,851	4,430,244	913,035	7,616,517	852,397	16,783.089	79.2	4,404,169	3,510,010	3,679,572	3,733,629
Nevada Northern	Nov.	165	68,048	4,808	80,558	9,676	6,432	966	15,288	4,963	37,479	46.5	43,079	17.534	17,267	31,834
	11 mos.	165	742,903	62,549	887,679	134,924	56,026	10,273	170,776	52,420	426,541	48.1	461,138	334,570	339,025	338,802
Newburgh & South Shore	Nov.	7	.....	.....	163,391	18,926	36,855	.....	63,742	4,262	123,785	75.8	39,606	26,344	32,037	32,830
	11 mos.	7	.....	.....	1,681,222	213,172	394,210	.....	686,841	47,345	1,341,568	79.8	339,654	200,949	242,989	313,739
New Orleans Great Northern	Nov.	276	252,460	19,779	281,394	36,000	58,376	11,591	81,772	11,093	199,045	70.7	82,349	65,249	40.468	45 831
	11 mos.	275	2.674.553	272,204	3,050,830	472,923	590,555	107,232	849,501	119.512	2,135,581	70.0	915.249	729,588	525,580	541,128
New York Central	Nov.	6,925	18,457,912	7,344,318	29,914,462	4,580,572	6,682,169	429,323	11,648,931	1,156,831	24,958,044	83.4	4,956,418	3,147,689	3.090,206	5,703,917
	11 mos.	6,925	219,527,590	90,555,845	355,705,783	50,393,298	73,550,236	4,705,596	124,726,943	13,085,886	271,530,274	76.3	84,175,456	60,489,204	57,857,802	66,870,697
Cincinnati Northern	Nov.	244	341,204	4,676	354,373	42,591	80,023	6,491	110,677	12,702	252,484	71.2	101,889	74,101	48.714	124,863
	11 mos.	244	4,145,739	63,906	4,308,510	525,473	845,206	69,366	1,362,857	123,231	2,926,567	67.9	1,381,943	1,086,233	772,710	986,030
Cleve., Cinn., Chicago & St. Louis	Nov.	2,397	5,428,204	1,128 622	7,143,396	954,390	1,520,629	151,107	2,674,731	254,425	5,632,052	78.8	1,511,344	1,083,067	986,621	1,638,076
	11 mos.	2,397	63,302,883	14,211,770	84,547,479	10,263,697	18,007,157	1,614,664	31,094,205	2,985,626	64,802,414	76.6	19,745,065	15,009,206	13,987,001	16,806,990
Indiana Harbor Belt	Nov.	117	.....	.....	941,939	138,430	191,061	4,089	386,088	24,287	755,044	80.2	186,895	157,690	83,292	49,840
	11 mos.	117	.....	.....	10,527,444	1,549,901	1,565,262	52,708	4,244,543	288,254	7,808,588	74.2	2,718,856	2,218,819	1,677,747	1,764,543

Revenues and Expenses of Railways

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1927—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1926.
Michigan Central	Nov.	1,855	$4,507,161	$1,505,831	$6,787,944	$638,976	$1,315,160	$130,230	$2,368,582	$217,884	$4,761,996	70.2	$2,025,948	$1,485,142	$1,470,429	$2,002,339
	11 mos.	1,855	56,278,497	18,363,694	83,091,161	9,718,746	15,436,810	1,381,954	27,105,835	2,787,822	57,451,321	69.1	25,639,840	19,867,140	19,608,502	21,943,860
Pittsburgh & Lake Erie	Nov.	231	2,010,752	205,506	2,294,087	394,377	753,089	29,424	831,783	82,873	2,094,195	91.3	199,892	65,748	488,661	890,791
	11 mos.	231	26,223,974	2,530,366	29,711,494	4,314,950	9,193,639	280,379	9,617,476	944,163	24,368,638	82.0	5,342,856	3,481,255	7,647,573	8,353,023
New York, Chicago & St. Louis	Nov.	1,690	3,897,171	122,728	4,173,741	520,387	740,835	124,240	1,502,095	152,019	3,020,561	72.4	1,153,180	950,408	744,423	758,917
	11 mos.	1,690	46,163,459	1,671,974	49,471,617	6,428,524	9,338,647	1,364,976	17,078,561	1,725,314	35,763,415	72.3	13,708,202	10,913,093	8,776,066	9,369,375
N. Y., New Haven & Hartford	Nov.	2,174	6,530,706	3,961,729	11,997,827	1,506,057	2,246,969	90,104	3,931,532	288,549	8,259,872	68.8	3,737,955	3,079,447	2,448,301	2,106,756
	11 mos.	2,175	69,397,652	45,131,210	128,564,148	17,643,906	24,506,968	998,062	43,424,618	3,527,977	92,090,298	71.6	36,473,850	30,608,461	23,316,059	23,177,902
New York Connecting	Nov.	20	258,790	.....	293,213	38,813	19,341	.....	39,904	1,809	99,867	34.1	193,346	157,346	135,305	157,029
	11 mos.	20	2,458,626	.....	2,802,266	308,094	158,521	.....	573,581	19,631	1,059,827	37.8	1,742,439	1,322,439	1,141,149	1,189,810
New York, Ontario & Western	Nov.	569	741,251	62,568	968,349	156,640	214,442	19,831	472,478	35,043	907,660	93.7	60,689	60,567	7,934	—2,706
	11 mos.	569	7,804,875	2,520,947	12,279,377	1,850,033	2,424,183	201,075	5,231,240	384,418	10,136,267	82.5	2,143,110	1,690,519	1,076,267	1,820,925
Norfolk & Western	Nov.	2,241	7,635,188	484,046	8,450,415	1,546,955	1,651,328	121,675	2,297,603	211,285	5,816,826	68.8	2,633,589	1,832,455	2,078,614	4,233,327
	11 mos.	2,241	93,092,782	6,324,574	103,146,721	14,621,754	20,051,264	1,225,878	26,736,621	2,315,306	64,774,770	62.8	38,371,951	28,858,681	31,689,332	37,601,829
Norfolk Southern	Nov.	931	722,417	43,723	811,094	112,593	119,052	28,037	310,764	29,108	596,848	73.6	214,246	152,167	123,435	122,174
	11 mos.	931	7,726,178	595,152	8,837,774	1,099,766	1,367,368	283,452	3,277,108	328,586	6,262,126	70.9	2,575,648	1,961,396	1,613,254	1,675,665
Northern Pacific	Nov.	6,667	7,686,435	855,400	9,225,518	649,896	1,458,292	178,498	2,724,699	241,185	5,224,995	56.6	4,000,523	2,999,967	3,375,533	2,952,337
	11 mos.	6,670	69,745,637	10,736,087	88,042,464	11,274,719	16,249,663	2,171,070	29,192,180	2,758,895	62,334,556	70.8	25,707,908	17,119,751	20,515,173	22,266,666
Northwestern Pacific	Nov.	477	287,561	123,772	455,506	108,726	90,228	10,332	238,023	22,055	469,321	103.0	—13,815	—54,402	—66,359	11,271
	11 mos.	477	3,868,998	1,743,073	6,182,321	1,129,275	911,560	90,160	2,542,090	227,955	4,899,572	79.3	1,282,749	833,905	703,345	1,263,692
Pennsylvania R. R.	Nov.	10,500	36,782,491	10,620,167	52,622,554	6,476,620	11,128,237	827,121	19,610,788	1,577,046	40,245,8 8	76.5	12,376,746	9,352,167	8,114,830	10,501,001
	11 mos.	10,500	430,599,166	129,122,232	616,887,527	79,366,977	129,687,878	8,751,413	225,608,218	17,385,922	468,402,243	75.9	148,485,284	113,557,327	100,283,087	101,745,437
Baltimore, Chesapeake & Atlantic	Nov.	130	85,676	25,252	117,528	11,394	20,805	1,674	82,855	2,836	119,564	101.7	—2,036	—2,036	—4,594	—2,878
	11 mos.	130	927,267	358,788	1,369,689	136,294	355,821	21,480	878,997	37,636	1,430,228	104.4	—60,539	—111,225	—119,324	—122,090
Long Island	Nov.	403	992,269	1,964,410	3,182,436	430,530	543,066	36,274	1,374,917	75,110	2,468,901	77.6	713,535	562,056	362,525	201,317
	11 mos.	403	11,000,198	24,340,157	37,778,268	5,070,302	5,884,044	366,249	15,397,084	891,820	27,732,211	73.4	10,046,057	7,555,876	5,633,602	5,531,327
West Jersey & Seashore	Nov.	378	426,199	283,038	752,679	139,828	131,719	15,970	409,690	25,232	722,622	96.0	30,057	30,057	19,775	5,484
	11 mos.	378	4,714,264	5,714,436	10,953,211	1,701,987	1,794,084	221,888	5,046,568	301,219	9,074,121	82.8	1,879,090	944,838	759,265	1,127,792
Peoria & Pekin Union	Nov.	19	20,394	2,315	154,767	24,447	13,541	2,177	67,859	7,230	115,254	74.5	39,513	8,013	31,436	—9,520
	11 mos.	19	265,420	25,053	1,697,504	240,247	159,690	18,566	743,339	91,450	1,253,292	73.9	444,212	224,138	461,662	489,124
Pere Marquette	Nov.	2,244	3,090,928	212,981	3,524,336	430,057	901,121	70,548	1,251,685	111,464	2,757,471	78.2	766,865	531,233	455,211	812,079
	11 mos.	2,244	36,183,470	2,978,692	41,677,564	4,667,115	8,773,733	699,760	13,930,276	1,226,642	29,293,532	70.3	12,384,032	10,063,797	8,819,088	9,333,207
Pittsburgh & Shawmut	Nov.	102	167,531	3,024	172,593	27,346	47,688	1,360	43,334	6,587	126,315	73.2	46,278	45,022	40,983	48,550
	11 mos.	102	1,650,996	38,162	1,715,965	257,746	526,582	17,336	472,940	96,103	1,370,707	79.9	345,258	332,100	413,484	458,800
Pittsburgh & West Virginia	Nov.	92	236,189	6,340	274,052	17,200	56,545	10,722	62,437	22,563	180,182	65.7	93,870	65,685	154,119	260,394
	11 mos.	92	3,314,694	68,836	3,734,537	252,836	666,468	112,579	772,891	287,205	2,224,377	59.6	1,510,160	995,852	1,832,165	2,461,628
Pittsburgh, Shawmut & Northern	Nov.	198	153,471	1,919	158,608	40,074	30,969	1,488	51,898	6,876	131,305	82.8	27,303	24,319	19,408	7,365
	11 mos.	198	1,638,878	25,977	1,702,247	359,598	331,705	17,357	622,009	73,503	1,404,172	82.5	298,075	265,007	165,450	203,320
Quincy, Omaha & Kansas City	Nov.	249	46,697	8,839	61,523	37,817	12,613	732	27,881	2,447	81,045	131.7	—19,522	—25,357	—28,504	5,543
	11 mos.	249	537,891	127,685	745,484	351,394	119,923	8,946	319,421	28,257	826,217	110.8	—80,733	—145,173	—179,078	—98,325
Reading	Nov.	1,139	6,627,618	697,232	7,651,805	896,934	1,720,795	71,938	2,786,527	193,647	5,672,714	74.1	1,979,091	1,499,497	1,664,358	2,878,026
	11 mos.	1,139	73,494,299	8,146,500	85,613,873	11,742,113	19,044,913	890,778	31,932,326	2,222,105	65,870,154	76.9	19,743,719	14,791,577	15,951,049	20,656,174
Atlantic City	Nov.	161	137,033	90,715	244,822	61,383	24,410	4,497	173,650	5,196	269,091	109.9	—24,269	—65,146	—91,006	—41,523
	11 mos.	161	1,431,074	2,338,241	3,984,139	935,342	350,345	79,994	2,205,205	63,633	3,635,898	91.3	348,241	—59,413	—398,166	159,917
Perkiomen	Nov.	41	100,893	3,010	107,011	7,672	5,767	107	47,531	1,240	62,334	58.3	44,677	36,951	30,099	45,311
	11 mos.	41	1,100,252	47,342	1,181,969	124,255	70,113	1,188	511,472	12,972	720,448	61.0	461,521	400,469	322,602	472,225
Port Reading	Nov.	19	148,328	.....	190,869	21,352	6,437	229	64,623	1,586	94,227	49.4	96,642	76,845	15,878	15,887
	11 mos.	19	1,718,213	.....	2,253,769	312,798	128,199	2,519	770,267	27,977	1,241,725	55.1	1,012,044	831,427	152,563	—28,858
Richmond, Fredericksburg & Potomac	Nov.	117	396,070	268,870	835,664	117,804	161,066	8,475	312,312	33,236	653,653	78.2	182,011	147,753	106,087	113,407
	11 mos.	117	5,118,847	3,590,657	10,595,381	1,296,297	1,865,801	98,661	3,819,577	397,451	7,764,597	73.3	2,830,784	2,232,283	1,673,301	2,466,058
Rutland	Nov.	413	164,218	40,374	293,823	345,509	89,531	11,387	177,749	12,477	637,653	217.0	—343,830	—310,832	—318,626	77,192
	11 mos.	413	3,319,414	1,022,868	5,637,002	1,358,944	1,107,910	120,203	2,293,947	154,250	5,053,035	89.6	583,967	339,796	390,111	892,728
St. Louis-San Francisco	Nov.	5,017	5,183,688	1,022,866	6,713,628	752,418	1,383,586	116,344	2,259,786	239,572	4,625,201	68.9	2,088,427	1,780,624	1,813,036	1,923,718
	11 mos.	5,017	59,610,238	12,810,260	78,014,624	10,293,379	15,297,483	1,265,962	25,323,956	2,705,356	53,963,775	69.2	24,050,849	19,576,423	20,084,689	21,237,738
Ft. Worth & Rio Grande	Nov.	233	97,749	14,519	128,823	23,841	22,091	3,739	58,741	5,614	113,964	88.5	14,859	10,740	874	—22,388
	11 mos.	233	891,713	166,466	1,182,219	279,452	239,617	36,757	594,642	61,031	1,208,714	102.2	—26,495	—71,481	—167,904	—226,186
St. Louis-San Francisco & Texas	Nov.	137	152,971	14,641	173,039	21,616	26,776	4,898	59,682	6,646	119,609	69.1	53,430	50,850	28,163	4,453
	11 mos.	137	1,540,013	153,479	1,743,422	332,864	294,066	54,949	651,930	82,382	1,414,993	81.2	328,429	299,836	49,946	161,547
St. Louis Southwestern	Nov.	940	1,259,986	96,566	1,432,038	207,372	215,392	69,377	364,546	61,860	925,206	64.6	506,832	393,634	321,558	417,587
	11 mos.	940	13,525,410	1,108,293	15,462,397	2,530,371	2,315,516	720,046	4,077,222	711,637	10,463,262	67.7	4,999,135	4,240,083	3,308,013	3,898,695

Revenues and Expenses of Railways

MONTH OF NOVEMBER AND ELEVEN MONTHS OF CALENDAR YEAR 1927—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1926.
St. Louis Southwestern of Texas	Nov.	807	$548,123	$54,959	$650,704	$120,802	$123,339	$28,065	$255,861	$33,747	$565,408	86.9	$85,296	$51,151	$102,576	$88,158
	11 mos.	807	5,654,571	604,338	6,796,771	1,786,186	1,270,950	312,583	2,729,515	369,543	6,509,818	95.8	286,953	—16,490	524,382	305,352
Seaboard Air Line	Nov.	4,306	3,786,381	682,534	4,906,764	562,778	832,593	221,657	1,887,510	202,696	3,750,042	76.4	1,156,722	878,857	797,351	1,085,983
	11 mos.	4,289	42,924,468	8,804,822	56,816,580	6,929,172	8,581,506	2,299,656	21,997,044	2,273,014	42,855,895	75.4	13,960,685	10,629,372	9,831,741	10,807,354
Southern Ry.	Nov.	6,771	9,347,275	1,849,390	12,186,141	1,502,724	2,043,449	246,712	4,006,473	357,709	8,235,400	67.6	3,950,741	3,094,298	2,916,583	3,118,479
	11 mos.	6,771	101,384,692	24,352,690	136,217,915	19,036,453	24,011,634	2,785,938	45,371,599	3,795,556	95,842,827	70.4	40,375,088	31,629,685	30,342,811	32,867,077
Alabama Great Southern	Nov.	314	662,625	143,726	870,471	135,026	152,122	23,680	261,128	23,677	602,618	69.2	267,853	222,994	225,185	171,323
	11 mos.	314	7,181,320	1,726,411	9,508,637	1,568,988	1,825,562	230,119	2,872,105	255,173	6,832,342	71.9	2,676,295	2,030,008	2,288,244	2,419,841
Cinn., New Orleans & Tex. Pacific	Nov.	338	1,359,203	258,495	1,711,390	339,925	377,606	45,857	485,054	67,295	1,327,116	77.5	384,274	299,477	265,194	213,167
	11 mos.	338	15,819,942	3,299,767	20,225,023	3,269,913	4,032,638	484,649	5,801,478	601,344	14,348,108	70.9	5,876,915	4,686,219	4,442,068	5,346,260
Georgia Southern & Florida	Nov.	401	270,110	99,580	400,545	64,170	62,819	4,556	134,461	5,537	276,310	69.0	124,235	110,519	108,868	28,108
	11 mos.	401	3,044,011	1,033,191	4,397,868	931,468	850,068	105,533	1,745,006	99,281	3,772,335	85.8	625,533	399,502	298,977	784,074
New Orleans & Northeastern	Nov.	204	377,130	75,731	484,529	76,249	73,319	12,751	134,615	15,558	316,647	65.4	167,882	127,298	88,938	141,984
	11 mos.	204	4,142,377	865,541	5,372,351	752,570	863,622	139,402	1,574,908	170,965	3,550,599	66.1	1,821,752	1,345,449	955,978	1,192,401
New Orleans Terminal	Nov.	20	1,113	.....	184,791	32,116	9,214	.....	59,418	1,639	102,387	55.4	82,404	73,400	57,259	33,456
	11 mos.	20	22,241	.....	1,798,756	247,236	106,558	.....	667,833	20,291	1,042,268	57.9	756,488	635,393	480,154	571,073
Northern Alabama	Nov.	110	95,329	7,901	106,029	5,352	3,579	2,151	34,660	2,824	58,560	55.2	47,469	42,569	22,149	32,005
	11 mos.	110	1,168,687	90,172	1,289,413	248,365	44,132	24,999	408,854	30,869	757,061	58.7	532,352	471,717	196,722	209,158
Southern Pacific	Nov.	8,933	12,359,868	2,958,883	16,892,834	2,355,795	2,754,551	372,411	5,758,931	626,751	12,177,397	72.1	4,715,437	3,555,749	3,331,849	4,240,184
	11 mos.	8,933	143,212,768	37,235,826	198,631,838	26,260,742	31,798,692	4,232,750	64,840,545	6,993,656	137,800,010	69.4	60,831,828	44,587,327	40,838,949	43,245,613
So. Pac. Steamship Lines	Nov.	....	869,475	29,623	1,018,505	20,957	200,310	15,601	666,861	36,884	940,613	92.4	77,892	74,823	76,487	184,715
	11 mos.	....	8,780,292	496,735	11,185,153	199,919	2,245,278	177,809	6,956,395	412,670	9,992,071	89.3	1,193,082	1,133,144	1,150,753	1,492,751
Texas & New Orleans	Nov.	4,595	4,770,516	896,316	6,133,080	852,293	1,110,755	161,163	2,183,260	260,299	4,513,827	73.6	1,619,253	1,330,343	1,106,529	820,661
	11 mos.	4,571	48,787,826	10,980,958	65,082,086	11,649,598	12,896,440	1,805,937	23,854,798	2,909,719	53,122,704	81.6	11,959,382	8,512,748	5,986,519	6,619,240
Spokane, Portland & Seattle	Nov.	554	648,230	84,126	790,693	73,322	90,457	9,775	214,943	21,172	413,970	52.4	376,723	292,435	272,526	229,746
	11 mos.	554	6,439,494	1,159,374	8,251,713	1,113,015	1,081,252	122,023	2,317,400	249,691	4,937,499	59.8	3,314,214	2,413,454	2,275,067	2,088,233
Tennessee Central	Nov.	296	220,440	20,539	255,023	52,233	47,423	9,151	95,574	12,528	216,682	85.0	38,341	31,350	18,100	32,995
	11 mos.	296	2,619,588	264,568	3,039,032	614,897	526,788	98,323	1,093,562	140,411	2,471,085	81.3	567,947	505,698	319,312	311,843
Terminal Railroad Assn. of St. L.	Nov.	55	.....	.....	1,033,872	185,095	98,665	2,213	439,843	33,691	762,590	73.8	271,282	189,731	269,323	262,144
	11 mos.	55	.....	.....	12,188,500	2,083,247	1,092,361	24,587	4,856,426	309,427	8,400,038	68.9	3,788,462	2,729,621	3,618,197	4,176,088
Texas Mexican	Nov.	162	63,841	5,115	76,029	23,141	18,681	3,600	39,231	6,743	90,626	119.2	—14,597	—19,614	—26,869	6,947
	11 mos.	162	1,030,746	69,482	1,208,606	247,951	229,510	43,191	477,998	67,575	1,064,128	88.0	144,478	80,693	—8,651	495,695
Toledo, Peoria & Western	Nov.	239	134,037	2,051	142,661	31,296	19,666	9,985	59,905	7,646	128,498	90.1	14,163	14,069	5,021	23
	11 mos.	241	1,485,409	54,735	1,630,742	387,464	218,308	89,878	677,811	82,028	1,455,421	89.3	175,321	155,104	31,548	—141,502
Toledo Terminal	Nov.	28	.....	.....	116,930	10,874	17,966	533	52,139	5,443	86,955	74.4	29,975	11,677	31,323	41,192
	11 mos.	28	.....	.....	1,420,906	221,054	172,823	6,033	576,136	52,179	1,028,225	72.4	392,681	186,139	497,483	520,194
Trinity & Brazos Valley	Nov.	367	304,621	9,780	325,505	36,978	32,689	5,944	97,538	11,904	185,046	56.8	140,459	130,595	98,378	74,111
	11 mos.	367	2,409,112	102,352	2,592,284	524,961	356,779	59,892	1,075,903	132,093	2,092,528	80.7	499,756	415,522	147,666	—225,453
Ulster & Delaware	Nov.	128	47,677	2,847	78,177	9,897	11,252	1,359	42,602	4,888	69,998	89.5	8,179	2,429	—1,948	—5,900
	11 mos.	128	477,751	233,478	1,084,953	203,270	173,461	17,891	542,996	55,941	993,559	91.6	91,394	28,144	—18,735	35,325
Union Railroad of Penna.	Nov.	45	.....	.....	645,505	194,001	179,050	153	346,722	5,132	725,058	112.3	—79,553	—88,303	—8,021	68,281
	11 mos.	45	.....	.....	9,212,845	1,430,360	2,231,912	1,755	4,203,782	133,340	8,001,033	86.8	1,211,812	989,425	1,785,549	2,781,590
Union Pacific	Nov.	3,712	8,334,596	1,084,462	10,158,552	822,335	2,062,157	167,307	2,661,336	322,686	6,187,141	60.9	3,971,411	3,147,250	2,656,045	2,635,809
	11 mos.	3,713	81,312,340	14,378,005	104,407,347	12,070,347	20,549,117	1,925,420	27,370,665	3,452,462	67,318,379	64.5	37,088,968	29,285,677	25,556,615	25,818,297
Oregon Short Line	Nov.	2,539	2,936,113	288,300	3,424,203	352,034	456,152	47,144	920,763	130,988	1,946,175	56.8	1,478,028	1,120,856	1,008,321	688,972
	11 mos.	2,538	26,811,977	3,861,879	33,091,124	5,346,206	5,237,551	572,918	9,490,174	1,331,776	22,601,150	68.3	10,489,974	7,509,284	6,463,049	6,562,123
Oregon, Wash. R. R. & Nav. Co.	Nov.	2,237	2,207,359	256,866	2,681,848	278,765	334,942	70,179	888,875	128,438	1,733,420	64.6	948,428	726,470	598,542	494,916
	11 mos.	2,237	21,040,542	3,419,150	26,812,088	4,596,736	4,033,607	852,517	9,403,583	1,316,546	20,504,686	76.5	6,307,402	4,142,932	2,683,295	4,336,334
Los Angeles & Salt Lake	Nov.	1,210	1,521,364	283,951	1,995,488	327,555	334,597	74,533	652,444	75,329	1,552,550	77.8	442,938	309,661	214,659	172,582
	11 mos.	1,208	16,360,462	4,556,619	23,444,567	4,356,777	4,344,759	861,328	7,205,651	837,293	18,783,455	80.1	4,661,112	3,163,631	1,987,812	2,442,560
St. Joseph & Grand Island	Nov.	258	293,434	11,202	321,889	36,349	32,323	2,968	104,173	13,882	189,695	58.9	132,194	105,083	89,257	54,481
	11 mos.	258	2,875,423	145,360	3,226,583	620,551	461,042	33,557	1,111,376	162,894	2,389,420	74.1	837,163	635,609	462,372	457,489
Utah	Nov.	111	186,021	.....	183,839	29,059	24,132	366	35,776	4,551	93,884	51.1	89,955	81,636	64,641	42,961
	11 mos.	111	1,583,209	36	1,584,822	221,634	411,311	4,092	299,864	62,742	999,643	63.1	585,179	488,207	418,644	341,810
Virginian	Nov.	545	1,427,901	41,604	1,584,873	168,497	336,367	14,426	328,841	32,768	877,502	55.4	707,371	607,371	664,091	1,071,632
	11 mos.	545	18,758,945	569,595	20,629,701	2,265,704	4,046,669	153,171	4,098,360	371,123	10,861,980	52.7	9,767,721	8,218,308	8,819,972	9,705,359
Wabash	Nov.	2,524	4,240,209	572,599	5,242,069	648,547	976,068	159,787	2,081,001	186,660	4,059,287	77.4	1,182,782	965,291	691,027	1,454,458
	11 mos.	2,524	50,030,300	7,486,654	62,029,429	8,812,111	10,907,044	1,794,745	23,786,239	2 013,179	47,378,453	76.4	14,650,976	11,851,595	8,807,180	11,241,115
Ann Arbor	Nov.	293	409,996	26,043	460,410	35,213	96,774	13,837	183,652	11,536	335,910	73.0	124,500	100,406	85,968	104,613
	11 mos.	293	4,765,509	236,310	5,198,434	630,718	1,101,914	140,942	2,013,967	127,207	3,995,398	76.9	1,203,036	928,202	738,009	936,986
Western Maryland	Nov.	804	1,581,465	29,397	1,657,218	186,497	321,820	37,115	463,744	47,256	1,064,977	64.3	592,241	507,241	555,290	647,880
	11 mos.	804	19,019,696	467,390	20,166,458	3,093,557	4,212,504	432,414	5,597,341	505,132	13,875,888	68.8	6,290,570	5,190,570	5,586,615	5,482,602
Western Pacific	Nov.	1,042	1,061,223	78,301	1,217,712	249,174	214,634	48,226	450,329	51,744	1,044,320	85.8	173,392	48,291	125,379	305,909
	11 mos.	1,042	12,518,235	1,591,806	15,365,268	2,900,894	2,733,864	503,261	4,959,516	494,486	12,166,828	79.2	3,198,440	1,816,981	2,266,110	4,159,854
Wheeling & Lake Erie	Nov.	511	1,163,183	25,069	1,285,216	189,816	413,205	37,808	443,536	46,506	1,132,303	88.1	152,913	60,467	75,627	342,966
	11 mos.	511	15,466,692	339,727	17,014,832	2,250,190	4,315,664	375,352	5,273,792	501,194	12,733,952	74.8	4,280,880	2,893,607	2,987,058	4,218,003

Traffic

The Southwest Shippers' Advisory Board will hold its seventeenth regular meeting in the Youree Hotel, Shreveport, La., on February 9.

The Interstate Commerce Commission has postponed the hearings on western livestock rates, part 9 of the general rate structure investigation, at Chicago from January 12 to February 6 and Kansas City from January 23 to February 16.

In the face of the application of the express companies of Canada, made to the Dominion Railway Board, for a general increase in rates amounting to 25 per cent., these companies have just announced some reductions in their rates, but the reduction in the rates for shipment of parcels up to 15 pounds is not in the nature of a percentage decrease, it is explained by the companies. The decrease, which is designed to meet the parcel post competition, covers the smaller packages which might be sent by mail.

Representative Newton, of Minnesota, has reintroduced as H. R. 8833 (by request) the bill which he introduced last March, which was written by officers of the National Industrial Traffic League, to repeal section 15a of the act to regulate commerce and substitute a direction to the Interstate Commerce Commission to adjust rates so as to give carriers an opportunity to earn sufficient income, as nearly as may be, as the basis of such credit, as in the judgment of the commission may be necessary to meet the transportation needs of the country. A later draft of the same bill was approved by the National Industrial Traffic League at its annual meeting.

The injunction restraining the Illinois Commerce Commission from interfering with a 20 per cent increase in suburban fares to and from Chicago, obtained in 1925 by 18 railroads centering in that city, was made permanent by Judge George T. Page of the United States Circuit Court of Appeals sitting en banc with federal judges James H. Wilkerson and George A. Carpenter on January 7. The railroads applied to the commission for permission to advance the fares 20 per cent but that body refused to grant permission. The Chicago & North Western applied to the Interstate Commerce Commission and secured permission to advance fares 20 per cent.

Chicago-Coast Time Cut

The Chicago, Milwaukee & St. Paul, the Northern Pacific in conjunction with the Chicago, Burlington & Quincy, the Great Northern in conjunction with the Burlington and the Union Pacific in conjunction with the Chicago & North Western, will place their through trains between Chicago and Portland, Ore., and Seattle, Wash., on a 68 hr. schedule instead of the present 70 hr. schedule, effective May 6. The new schedules will affect the North Coast Limited of the Northern Pacific, the Oriental Limited of the Great Northern, the Olympian of the Chicago, Milwaukee & St. Paul, and the Portland Limited and the Continental Limited of the Union Pacific.

Export Iron and Steel Rates Reduced

The Interstate Commerce Commission allowed to go into effect on December 31 tariffs filed by the eastern railroads making a reduction of 20 per cent in the freight rates on export shipments of iron and steel from points in Official (eastern) Classification territory to the north Atlantic ports, in spite of protests filed by the Bethlehem Steel Company and others and by a number of Kansas farm organizations asking the commission to suspend the rates. The tariffs provide that the rates shall be in effect for an experimental period of one year and expire by limitation at the end of 1928.

Increased Travel to National Parks

Travel to the national parks and monuments of the United States has reached a new record according to the annual report of the secretary of the Interior on national park service for the fiscal year 1927. A total of 2,354,643 persons visited the national parks and 443,197 the national monuments, making a total of 2,797,840. This was an increase of 482,935 persons or 21 per cent over the previous high record of 1926. Among the parks and monuments showing the greatest increase are: Yosemite, 226,221; Platt, 170,670; Lafayette, 22,443; Grand Canyon, 22,104; Mount Ranier, 38,245; and Yellowstone, 13,018. Among those showing decreases are: Hot Springs, General Grant, Crater Lake, and Wind Cave.

B. & O. to Have New Station in New York

The Baltimore & Ohio has concluded arrangements to occupy a large space on the first floor of the new office building, now being constructed at Forty-second street and Lexington avenue, New York City, as a passenger station and motor coach terminal for its trainside connection service. The new facilities will permit the motor coaches to enter the building from the Forty-first street side, driving to the center of the building adjacent to the waiting rooms and ticket offices, where passengers may board or leave them instead of at the street curb as at present.

The main entrance to the ticket office and station quarters will be on Forty-second street opposite the Grand Central Terminal and Hotel Commodore, to both of which, as well as to the subway and the Biltmore and Roosevelt hotels, there will be direct underground connection within the building without going into the open.

The space arranged for is much larger than that now occupied in the Pershing square building and only a short distance removed in the same square. The new station facilities are expected to be ready by next Fall or earlier.

Equipment and Supplies

Locomotives

THE GREAT NORTHERN contemplates ordering 6 Mallet type locomotives.

THE NEW YORK, ONTARIO & WESTERN is inquiring for from four to six 4-8-4 type locomotives.

THE QUARAHUY EITAQUY ESTRADO DE FERRO, Brazil, has ordered one Pacific type locomotive from the Baldwin Locomotive Works.

Freight Cars

THE TEXAS & PACIFIC has ordered 10 caboose cars from the American Car & Foundry Company.

THE ST. LOUIS-SAN FRANCISCO is inquiring for 30 air dump cars.

THE FRUIT GROWERS EXPRESS is inquiring for 480 steel underframes for refrigerator cars.

THE ATCHISON, TOPEKA & SANTA FE has ordered 100 air dump cars of 30 cu. yd. capacity from the Magor Car Corporation and 100 caboose cars from the American Car & Foundry Company.

THE TEXAS & PACIFIC is inquiring for 10 caboose cars.

THE NORTHERN PACIFIC is inquiring for 50 caboose car underframes.

THE LOUISVILLE & NASHVILLE has ordered 100 ballast cars from the Rodger Ballast Car Company.

THE ATCHISON, TOPEKA & SANTA FE is inquiring for from 150 to 200 underframes.

THE CHESAPEAKE & OHIO is inquiring for 500 hopper car bodies of 70 tons' capacity and repairs to 500 sets of 70-ton trucks.

THE OTIS STEEL COMPANY, Cleveland, Ohio, has ordered 6, 30 cu. yd. extension side dump cars, from the Clark Car Company.

THE UNION PACIFIC contemplates buying about 500 50 ton flat cars.

THE GREAT NORTHERN is inquiring for 8 air dump cars of 30 cu. yd. capacity.

THE SOUTH AFRICAN RAILWAYS are inquiring, through the car builders, for 100 gondola cars of 40 tons' capacity.

THE SHARPLESS SOLVENT CORPORATION, Charleston, West Va., has ordered 4 tank cars of 6,000 gal. capacity, from the General American Tank Car Corporation.

THE SOUTHERN has ordered 500 automobile cars from the American Car & Foundry Company. This is in addition to the orders reported in the *Railway Age*

of December 31. The Southern has ordered 20 extension side dump cars of 30 cu. yd. capacity from the Clark Car Company. Inquiry for this equipment was reported in the *Railway Age* of December 10.

THE CANADIAN PACIFIC has ordered 200 refrigerator cars from the National Steel Car Corporation; 300 automobile cars and 50 Hart-Otis ballast cars from the Canadian Car & Foundry Company.

THE PACIFIC FRUIT EXPRESS has ordered from 300 to 600 steel underframes from the Pacific Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of December 17.

THE TEXAS & PACIFIC has ordered 500 gondola cars from the Pressed Steel Car Company and 300 flat and 200 automobile cars from the American Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of December 10.

THE RAILWAY ADMINISTRATION of the Imperial Government of Persia is asking for bids until 10 a. m. February 19, for miscellaneous railway supplies including rails, track equipment, cars and locomotives for 24 in. and 30 in. gage line. W. B. Poland is director general of railways and Mehdi Gholi Khan Hedayat is prime minister and minister of public works. Bids should be addressed to the minister of public works, Teheran, Persia.

Passenger Cars

THE UNION PACIFIC is inquiring for 10 dining cars and 15 coaches.

THE WESTERN PACIFIC has ordered 4 cafe cars from the Pullman Car & Manufacturing Company.

THE CHICAGO & ALTON is inquiring for 2 postal cars and 7 combination baggage and mail cars.

THE PENNSYLVANIA has ordered six 73-ft. gas-electric rail motor cars, to be equipped with Electro-Motive Company 275 h.p. power plants.

THE NEW YORK CENTRAL has given an order for the rebuilding of 33 steel underframe passenger coaches, to the American Car & Foundry Company.

THE PITTSBURGH RAILWAYS COMPANY has ordered 15 interurban cars from the St. Louis Car Company. Inquiry for this equipment was reported in the *Railway Age* of November 26.

THE MOBILE & OHIO has ordered three 72 ft. mail and baggage gas-electric rail motor cars; from the St. Louis Car Company. These cars are to be equipped with dual power plants of 440 horsepower each furnished by the Electro-Motive Company. An order for 3 trailer cars 72 ft. long was also sent to the St. Louis Car Company.

THE CANADIAN PACIFIC has ordered 15 palace horse cars and 5 parlor-cafe car frames from the National Steel Car Corporation, and 20 first class passenger car frames from the Canadian Car & Foundry Company.

THE TEXAS & PACIFIC has ordered 3 dining cars and 5 combination baggage and express cars from the American Car & Foundry Company. Inquiry for this equipment was reported in the Railway Age of December 10.

Iron and Steel

THE ERIE has received bids on 100 tons of steel for a runway at Meadville, Pa.

THE BALTIMORE & OHIO has received bids on 450 tons of steel for bridges over various streets in Philadelphia, Pa.

THE PENNSYLVANIA is inquiring for 150 tons of steel for a bridge at Bird-in-Hand, Pa., and 150 tons for a transfer bridge at Cape Charles, Va. Bids have been received for 600 tons of steel for a passenger station at Lancaster, Pa.

THE CHESAPEAKE & OHIO is inquiring for 500 tons of steel for a bridge at Covington, Ky.

THE BOSTON & MAINE has received bids on 1800 tons of steel for a bridge at Westboro, N. H., and has ordered 3000 tons of steel from the American Bridge Company, to be used on the North Station, Boston, Mass.

THE NEW YORK CENTRAL is inquiring for 1000 tons of steel for a viaduct at Forty-fifth street and Vanderbilt avenue, New York City.

Signaling

THE TEXAS & PACIFIC has ordered from the General Railway Signal Company an electric interlocking for Big Sandy, Tex., 18 working levers.

THE CHESAPEAKE & OHIO has ordered from the Union Switch & Signal Company, an electro-mechanical interlocking for Talcott, W. Va.; eight mechanical levers and three electric; also one of ten mechanical and three electric for Jerry's Run, Va.

THE MISSOURI-KANSAS-TEXAS has ordered from the Union Switch & Signal Company, a mechanical interlocking, five levers, for its crossing with the Houston & Texas Central at Lancaster, Tex.

THE PENNSYLVANIA has ordered from the Union Switch & Signal Company, an electro-mechanical interlocking for Collinsville, Ill.

THE CHICAGO, MILWAUKEE & ST. PAUL has ordered 43,000 tons of rail from the Illinois Steel Company.

THE CHICAGO GREAT WESTERN has ordered 3,000 tons of rail, from the Illinois Steel Company.

THE ST. LOUIS SOUTHWESTERN has ordered 13,800 tons of rail divided among the Bethlehem Steel Company, the Illinois Steel Company and the Inland Steel Company.

THE NEW YORK, NEW HAVEN & HARTFORD has ordered from the Union Switch & Signal Company, material for the coded continuous automatic train stop to be installed on its line from Cedar Hill (New Haven) Conn., eastward to Auburn, R. I., 107 miles. The order includes 31 color-light signals, 141 locomotive equipments, 436 relays and other apparatus.

THE CENTRAL OF NEW JERSEY has ordered from the Union Switch & Signal Company, 40 locomotive equipments for the coded continuous automatic train stop system to be used between Red Bank, N. J., and Winslow Junction.

THE CONSOLIDATED RAILWAYS OF CUBA have ordered from the Union Switch & Signal Company, material for mechanical interlockings at two crossings, Tahon and Vergara.

Machinery and Tools

THE TEXAS & PACIFIC has ordered a 5 ft. plain Right Line radial drill and a 2,500 lb. single frame steam hammer, from the Niles-Bement-Pond Company.

THE DELAWARE, LACKAWANNA & WESTERN, reported in the *Railway Age* of January 7 as asking for prices on miscellaneous machine tools, is now inquiring for the following:

1 42-in. squaring shears.
1 50-ton drop table, electric driven.
1 Wheel press recording gage.
2 A.C. motor driven floor grinders.
1 50-ton forging, bushing and bending press.
1 18-in. reach pneumatic yoke riveter.
1 Hose dismounting and assembling machine, pneumatically operated.
1 30-in. by 10-ft. geared heavy duty engine lathe.
1 54-in. by 30-in. by 16-ft. heavy horizontal spindle milling machine.
1 50-ton forcing, bushing and bending press.
1 42-in. vertical turret lathe.
2 16-in. by 6-ft heavy duty geared head bolt lathes.
1 13-in. by 16-in. power hack saw.
1 48-in. radial multi duty ball bearing drill.
1 14-in. single spindle high speed ball bearing sensitive drill.
1 20-in. by 8-ft. heavy duty selective geared head engine lathe.
1 Metal band saw for cutting tool steel.
1 Flexible shaft grinder.
1 Nibbing machine and cutter.
1 100,000-lb. capacity testing machine.
1 8,000-lb. double leg guide ram steam hammer.
1 Portable sand separator and blender.
1 Portable swing grinder.
1 42-in. vertical turret lathe.
1 10 inch by 36 inch universal grinding machine.
1 Heavy double axle lathe 30½ in. by 9 ft.
1 Slitting shears.
1 Rotary pump for pumping oil.

DELAWARE, LACKAWANNA & WESTERN.—This railroad has given a contract to the T. F. Foley construction Company of Pittsburgh, Pa., for the erection of a bridge on its line at Rockaway, N. J., at an approximate cost of $400,000.

THE CENTRAL VERMONT resumed passenger service from Montpelier, southward to Northfield, Vt., about ten miles, on January 3, just two months after the disastrous flood which suspended traffic on a considerable mileage of its main line. From Northfield, southward to Bethel, about 25 miles, there is still a large amount of work to do to restore the tracks; and the same is true of a considerable mileage in the vicinity of Waterbury, north of Montpelier Junction.

Supply Trade

The **Ohio Brass Company,** Mansfield, Ohio has opened an office at 721 Healy building, Atlanta, Ga. **K. V. Farmer, H. H. Hoxie, J. A. Whatley and G. W. Willis,** sales representatives in that part of the country now have their headquarters in the Atlanta office.

Charles H. Leinert, president of the Leinert Valve Company, Inc., with office at 310 South Michigan avenue, Chicago, has been appointed district representative in the Chicago district, for the **Birdsboro Steel Foundry & Machine Company,** Birdsboro, Pa.

The Harrison Steel Castings Company, Attica, Ind., has acquired all of the assets and real estate of the **National Car Coupler Company,** Attica. This company will operate the plant, continuing the manufacture of miscellaneous steel castings, knuckles and couplers with the same management and policies under which the former company operated.

A. M. Andersen, who has been appointed sales engineer in charge of the railway department, western territory, of the **Gould Storage Battery Company, Inc.,** with headquarters at 32 West Randolph street, Chicago, was born in Emmet county, Iowa, on September 29, 1885. He attended Armour Institute of Technology, Chicago, and later entered the service of the Pullman Company as an electrician. Subsequently he was foreman electrician and then electrical supervisor with the Pullman Company, his entire service embracing a period of

A. M. Andersen

nearly twenty years. For seven and a half years Mr. Andersen was with the Chicago office of the Edison Storage Battery Company as a sales representative and was serving in this capacity at the time of his recent appointment as sales engineer for the Gould Storage Battery Company, Inc.

H. F. T. Erben, assistant vice-president of the **General Electric Company,** retired on January 1, after more than forty years of service. At the time of his retirement he was also vice-chairman of the General Electric manufacturing committee. **B. L. Delack** has been appointed manager of the Schenectady plant of the General Electric Company, and **E. A. Wagner** has been appointed manager of the Pittsfield, Mass., plant. The sales organization changes include the appointment of **C. N. Gregory** as manager of the New Haven, Conn., office, succeeding Frederic Cutts, and **R. B. Ransom** has been appointed resident agent in charge of the Hartford office, succeeding Mr Gregory.

George L. Pollock, vice-president and treasurer of the Burnside Steel Foundry Company since its organization, has resigned to become vice-president of the **Nugent Steel Castings Company,** Chicago. Prior to becoming associated

G. L. Pollock

with the foundry industry, Mr. Pollock had been with the purchasing department of the Chicago, Burlington & Quincy and later served as purchasing agent of the Wheeling & Lake Erie, the Chicago & Western Indiana and the Belt Railway of Chicago.

The carbon sales division of the **National Carbon Company, Inc.,** with general sales headquarters at Cleveland, Ohio, has opened branch sales offices located at the present brush service plants of the company, at 357 West Thirty-sixth street, New York City; 551 West Monroe street, Chicago; No. 3 Barker place, Pittsburgh, Pa., and 1824 Ninth avenue, North Birmingham, Ala. **E. A. Williford** is manager of the carbon sales division, at Cleveland; **J. A. Hammond,** and **E. R. Geib** are assistant managers, Cleveland; **E. C. Friday,** district manager, New York City; **J. L. Green,** district manager, Chicago; **V. J. Nolan,** district manager, Pittsburgh and **J. B. Collins,** sales manager, Birmingham.

Jenkins & Gunther, Santa Fe building, Dallas, Texas, have been appointed sales agents of the **Rome Wire Company Division,** of the **General Cable Corporation.**

W. A. Spuehler, secretary of the **Burnside Steel Foundry Co.,** Chicago, has been elected vice-president and treasurer to succeed George L. Pollock resigned. He will be succeeded by **H. J. Finlay.**

P. C. Brooks, president of **E. T. Fairbanks & Co.,** scale manufacturing subsidiary of Fairbanks, Morse & Co., and vice-president of the **Canadian Fairbanks, Morse Co., Ltd.,** also has been elected vice-president of **Fairbanks, Morse & Co.** After graduating from Georgia Institute of Technology in 1891 where he studied mechanical engineering, he was connected with a number of manufacturing organizations and in

P. C. Brooks

1899 he became associated with the Beloit works of Fairbanks, Morse & Co., where he became assistant manager and later acting manager. After holding various other positions with Fairbanks, Morse & Co. and its subsidiaries he was elected vice-president of the Canadian Fairbanks, Morse Co., Ltd., in 1916 and in the following year he was elected president of E. T. Fairbanks & Co.

Obituary

John Henderson, treasurer of the Edgewater Steel Company, Pittsburgh, Pa., since its organization in 1916, died on December 30. Mr. Henderson was born in Scotland in 1855, and has been identified with the steel industry since coming to this country in 1886. He started his business career with the Carnegie Steel Company. Later he was treasurer of the Latrobe Steel & Coupler Company and subsequently, treasurer of the Inter-Ocean Steel Company, of Chicago.

Benjamin F. Jones, Jr., chairman of the board of directors of the Jones & Laughlin Steel Corporation, died at his home in Pittsburgh, Pa., on January 1. Mr. Jones was the son of the founder of the corporation and was born on April 21, 1868 in Pittsburgh. He was educated at Princeton and after his graduation from college in 1891, entered the employ of Jones & Laughlin, Limited. He later served as treasurer and a member of the board of managers. In 1900 he became president, and when the Jones & Laughlin Steel Corporation was formed in 1923 he became chairman.

Construction

ATCHISON, TOPEKA & SANTA FE.—Ponca City, Okla., has voted approval of the issuance of $55,000 of bonds as the city's share of the cost of constructing a highway subway under the tracks of this company at South Avenue.

BESSEMER & LAKE ERIE.—This railroad has let a contract to the L. A. Wells Construction Company of Cleveland, O., for the removal of a part of the west government pier at Conneaut Harbor, O., and for the rebuilding of part of the pier in Dock No. 1. Cost of the work involved is estimated at $113,000.

BOSTON & MAINE.—Plans are being considered by this road for improvements at Lawrence, Mass., to include the construction of a new central station, two bridges and the elimination of two grade crossings. The total cost of these improvements is expected to be in the neighborhood of $1,000,000.

BOSTON & MAINE.—This company has given a contract for the rebuilding of bridges Nos. 26 and 27 on its line at South Lawrence, Mass., to the Boston Bridge Works.

CANADIAN NATIONAL.—This railroad plans the construction of a new express terminal, at Toronto, to be a five story structure of brick and steel to cost about $300,000.

CENTRAL OF NEW JERSEY.—A contract for the construction of a viaduct on its line at Rockaway, N. J., has been let by this railroad to the T. F. Foley construction Company of Pittsburgh, Pa. Cost of the work involved is estimated at $75,000.

CHICAGO, ROCK ISLAND & PACIFIC.—This company has applied to the Interstate Commerce Commission for authority to construct 7.16 miles of new line through Oklahoma City, Okla., in place of a line of .77 miles to be abandoned.

CINCINNATI UNION TERMINAL.—This company has applied to the Interstate Commerce Commission for authority for the construction and operation of a new union passenger station and equipment terminal at Cincinnati, with 5.79 miles of double main track and 13.55 miles of single track, to be rented and used by the Baltimore & Ohio, Cleveland, Cincinnati, Chicago & St. Louis; Pennsylvania; Norfolk & Western; Chesapeake & Ohio, Cincinnati, New Orleans & Texas Pacific, and Louisville & Nashville railroads, all the roads operating into the city. It is proposed to finance the construction according to the application, by an issue of $3,500,000 of common stock, to be purchased in equal shares by the seven railroads, a possible issue of $3,000,000 of preferred stock to be sold to Cincinnati interests anxious to hasten the development, and the balance of the estimated cost, $25,000,000 by the issue of bonds guaranteed by the seven interested railroads.

HIGHWOOD WESTERN.—Notice of legislation to incorporate this company for the purpose of constructing a railroad from either Okotoks, Atla., or High River to Sparwod, B. C., on the Canadian Pacific has been filed at Ottawa, Ont. The railroad would be constructed along the Highwood and Elk rivers.

KANSAS CITY SOUTHERN.—The Interstate Commerce Commission has granted an extension of time for three years from December 31, 1927, for the completion of two lines in Caddo Parish, La., by this company and the Kansas City, Shreveport & Gulf under the commission's certificate of October 31, 1925.

MAINE CENTRAL.—Plans are being made for the reconstruction of the Passumpsic River bridge at St. Johnsbury, Vt., at a cost of $50,000. The American Bridge Company has been awarded a contract for the steel work of this bridge at a cost of approximately $20,000.

MOUND CITY & EASTERN.—The Interstate Commerce Commission has made public a proposed report by Examiner O. D. Weed recommending the issuance of a certificate authorizing the construction of this company's proposed line from Mound City to Leola, S. D., 70 miles. Objections to the granting of the certificate were made by the Great Northern and Minneapolis, St. Paul & Sault Ste. Marie.

NEW YORK CENTRAL.—This railroad has let a contract for the construction of signal stations Nos. 48 and 49 at Buffalo, N. Y., to William Franklin of that city. A contract for construction of signal station No. 27 at Rochester, N. Y., was let to the Gorsline & Swan Construction Co., of Rochester. The contract for the demolition of the Melish warehouse in New York and the erection of a one-story structure on the same site was let to the M. F. Kelly Building Corporation.

NORFOLK & WESTERN.—This railroad has given a contract for the elimination of grade crossings at Sutherland and Poole, Va., on the Norfolk division, to H. M. Waugh, railroad contractor, of Williamson, W. Va. The work involves the placing of about 2500 cu. yd. of concrete and the excavation of about 15,000 cu. yd. of earth.

PACIFIC GREAT EASTERN.—A contract for the construction of a concrete lined tunnel under Lonsdale Avenue, extending from St. George's to Rogers Avenues, North Vancouver, B. C., a part of the connection between this railroad and the terminal railway of the Vancouver Harbor Board has been let to the Vancouver Pile Driving and Contracting Company, Vancouver, B. C., at a cost of about $198,000.

SOUTHERN.—The Interstate Commerce Commission has made public a report proposed by Examiner Thomas F. Sullivan recommending that the commission deny an application of this company for authority for an extension of its line or operation under trackage rights over the tracks of the Lehigh Portland Cement Company at Tarrant City, Ala.

SOUTHERN PACIFIC.—A contract for the construction of highway subways under the line of this company at two points near Applegate, Cal., has been let by the California Highway department to W. A. Bechtel, San Francisco, Cal., at a cost of about $43,000.

ST. LOUIS-SAN FRANCISCO.—Bids were received until January 13 by the Board of Public Service of St. Louis, Mo., for the construction of a viaduct over the tracks of this company at Arsenal Street, St. Louis. The viaduct will be about 1,750 ft. long with a 60 ft. roadway. The Frisco will contribute about $300,000 to the total cost of $531,000.

TERMINAL RAILROAD ASSOCIATION OF ST. LOUIS.—This company, the East St. Louis & Suburban and the City of St. Louis, Ill., plan the construction of a reinforced concrete viaduct to carry the tracks of the two railroads over State street, near Twenty-first street, at East St. Louis. The project will involve the elevation of the tracks of the T. R. R. A. about 10 ft. above their present level and the depression of State street about 6 ft. The cost, which will be divided between the two railroads and the city, is estimated at $300,000.

VICKSBURG BRIDGE & TERMINAL COMPANY.—This company has been organized for the purpose of constructing a combination railroad and vehicular bridge across the Mississippi river at Vicksburg, Miss. The main structure will be made up of five spans having lengths of 417 ft., one span having a length of 178 ft. and a channel span which will have a length of 825 ft. The cost of the structure has been estimated at $3,000,000. It is understood that negotiations are now under way for the use of the bridge by the Vicksburg, Shreveport & Pacific, a subsidiary of the Illinois Central.

B. & M. to Spend Six Millions

A program of reconstruction by the Boston & Maine involving an expenditure aggregating $6,010,000, to make permanent the emergency reconstruction by which railroad service was resumed after the floods and to make other improvements in the course of the year on bridges and roadbed elsewhere on the system, was announced recently by President George Hannauer.

The 1928 program includes 92 bridges which represent an aggregate of $2,050,000, of which about one quarter is permanent replacement of structures which were washed away or damaged by the floods. The budget for improvements to the Boston & Maine's right of way in other places with rock ballasting, heavier rails and more ample bridges, represents the remainder of the proposed expenditures.

Financial

ATCHISON, TOPEKA & SANTA FE.—*Lease Renewal.*—This company has been authorized by the Interstate Commerce Commission to renew its lease of the Texas & Gulf.

ATCHISON, TOPEKA & SANTA FE.—*Stock.*—The Interstate Commerce Commission has authorized an issue of $9,296,400 of additional common stock, to be sold to present stockholders at par for the purpose of retiring underlying bonds.

CAMBRIA & INDIANA.—*Bonds Offered.*—Drexel & Co. have offered $1,800,000, 4½ per cent, first mortgage bonds, maturing in 1968 at 99 and interest, to yield over 4.55 per cent. The purpose of the issue is to provide funds for the retirement of $326,000 first mortgage, 5 per cent bonds due 1936 and all of the $1,000,000 general mortgage 6 per cent bonds due 1944 which will be called for payment on May 1, 1928 and August 1, 1928, respectively, and for completion of a 5 mile extension of the road.

CENTRAL VERMONT.—*Receivers' Certificates.*—Judge Harland B. Howe of the United States District Court at Burlington, Vt., has granted a petition of the receivers permitting them to negotiate with Dillon, Read & Co., of New York, for a loan not to exceed $4,976,500 on receivers' certificates to be issued at a face value of $5,000,000 with interest at 4½ per cent.

CLEVELAND UNION TERMINALS COMPANY.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue $5,000,000 of first mortgage 4½ per cent 50-year sinking fund bonds, to be sold at not less than 98, and to be guaranteed by the New York Central, the Cleveland, Cincinnati, Chicago & St. Louis, and the New York, Chicago & St. Louis. The proceeds are to discharge indebtedness to the proprietary companies for expenditures in connection with the construction of the terminal.

GUANTANAMO & WESTERN. — *Bonds Sold.*—Hemphill, Noyes & Co., Peabody, Smith & Co., Inc., and J. A. Sisto & Co. announced an offering on January 5 of $3,000,000 first mortgage 6 per cent bonds, series A, maturing January 1, 1958, at 97 and interest, giving a yield of about 6.22 per cent to maturity. This company, which is incorporated in Maine, owns and operates about 91 miles of railroad in the province of Oriente, Cuba. The proceeds of the issue will be applied to the payment of a 6 per cent loan of $450,000 from the Cuban Government, due in 1928, $600,000 first mortgage bonds due in 1929, and $1,878,500 refunding mortgage 6 per cent bonds due in 1948, which bonds will be presently called for redemption.

INTERNATIONAL - GREAT NORTHERN. — *Bonds.*—This company has applied to the Interstate Commerce Commission for authority for the authentication and delivery of $5,518,000 of first mortgage 5 per cent bonds and for the sale of $5,500,000 of the bonds to Kuhn, Loeb & Co., at 99½, the balance to be pledged as security for short term notes.

LEHIGH VALLEY.—*Bonds.*—The Interstate Commerce Commission has authorized an issue of $12,686,000 of general consolidated mortgage bonds, to be sold at not less than 90¾ and interest. The public offering of these bonds was reported in the *Railway Age* of December 31.

MISSOURI-KANSAS-TEXAS.—*Bonds Authorized.*—The Interstate Commerce Commission has authorized this company to issue $13,600,000 4½ per cent prior lien mortgage bonds, series D, to be sold to Kuhn, Loeb & Co., Ladenburg, Thalmann & Co., the National City Bank, J. & W. Seligman & Co., and Hallgarten & Co., at 97¼ and interest, giving an average annual cost to the carrier of approximately 4.642 per cent. The proceeds of the issue will be used to redeem $12,894,577 6 per cent prior-lien mortgage bonds which mature January 1, 1932, but which may be called for redemption at a premium of 2½ per cent. It is proposed to call these bonds on February 1, 1928.

NEW ORLEANS, TEXAS & MEXICO.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue $5,989,000 of first mortgage 4½ per cent bonds, in place of a like amount of 5 per cent bonds previously authorized to be issued for pledge, and to sell $5,900,000 to Kuhn, Loeb & Co., at 95¾.

NEW YORK, NEW HAVEN & HARTFORD.—*Note.*—This company has filed with the Interstate Commerce Commission supplemental application asking authority to pledge $20,000,000 of the $80,000,000 of first and refunding mortgage bonds authorized by the commission in 1920 as collateral for a new note for $17,000,000 at 5 per cent, the proceeds of which are to be used to pay a 6 per cent note for that amount to the director general of railroads which has been sold by the director general. An arrangement has been made with the present holders of the note to pay it on March 1.

NORTHERN PACIFIC.—*Review of Guaranty Decision Denied.*—The Supreme Court of the United States on January 3 declined to review the decision of the court of appeals of the District of Columbia in which the lower court recently declined to set aside an order of the Interstate Commerce Commission in which the commission held that the company had been overpaid $1,269,905 in advance and partial payments on account of its guaranty for the six months following the termination of federal control of the railroads. The railroad took the position that the commission had not power to issue a revised finding of the amount due.

Abandonment.—The Interstate Commerce Commission has made public a report proposed by Examiner O. D. Weed recommending that the commission authorize the abandonment of the line from Pinehurst, Mont., to Trout Creek, about 15.89 miles.

PENNSYLVANIA.—*Abandonment of Branch.*—The Interstate Commerce Commission has authorized the Western New York & Pennsylvania and the Pennsylvania, lessee, to abandon operation of that portion of the Wolf Creek branch extending from Carmona to Redmond, 4.7 miles, in Mercer and Butler Counties, Pa., but it denied that portion of the application seeking authority for abandonment of that portion of the branch between the spur leading to mine No. 5 and Carmona, 3 miles.

SEABOARD AIR LINE.—*Control of Naples, Seaboard & Gulf.*—The Interstate Commerce Commission has authorized the Seaboard Air Line to acquire control of the Naples, Seaboard & Gulf Railway by purchase of capital stock. It had previously authorized the Seaboard to acquire control under lease. Authority has also been granted to the Naples, Seaboard & Gulf to issue $1,179,000 first mortgage, 25 years, 6 per cent bonds, series A, to be sold to the Seaboard at par and the proceeds used for capital purposes. At the same time the Seaboard has been authorized to issue $1,184,000 first and consolidated mortgage 6 per cent bonds, series A, to be pledged and repledged as collateral security for short-term notes.

SEABOARD AIR LINE. — *Bonds.* — This company has applied to the Interstate Commerce Commission for authority for the authentication and delivery of $1,749,000 of first and consolidated mortgage 6 per cent bonds, to be pledged as collateral for short term notes.

Bonds.—This company has also applied to the Interstate Commerce Commission for authority to nominally issue $5,225,000 of first and consolidated mortgage 6 per cent bonds, in reimbursement of the cost to it of the capital stock of the Charlotte Harbor & Northern. In another application the company asks authority to issue and sell $7,500,000 of three-year 5 per cent secured notes and to pledge as security therefor $6,000,000 of first and consolidated mortgage bonds and $4,000,000 of Seaboard All-Florida first mortgage gold bonds.

Notes Offered.—Dillon, Read, & Co. and Ladenburg, Thalmann & Co. announced an offering on January 11 at 99½ and interest, giving a yield of 5.18 per cent, of $7,500,000, 3 year, 5 per cent secured notes, series A, maturing February 1, 1931.

In respect of the notes there are initially to be pledged with the trustee under the indenture an aggregate of $10,000,000 principal amount of bonds, consisting of not less than $6,000,000 principal amount of Seaboard Air Line, first and consolidated mortgage 6 per cent gold bonds, series A, due September 1, 1945; the balance to consist of Seaboard-All Florida Railway first mortgage 6 per cent gold bonds, series A and/or series B, due August 1, 1935.

The proceeds are to be used to defray the cost of the acquisition of the capital stock of Charlotte Harbor & Northern, for additions and betterments to the lines of the company or its subsidiaries, or to reimburse the company for expenditures made for such purposes, and for other corporate purposes.

SOUTHERN PACIFIC.—*Acquisition.*—The Interstate Commerce Commission has issued a certificate authorizing this company to acquire by merger of its corporate entity the Lake Tahoe Railway & Transportation Company, which operates a line from Truckee, Nevada County, Cal., to Tahoe in Placer County, totaling with spurs 17 miles. The Lake Tahoe has been controlled by lease since 1925.

GEORGIA, FLORIDA & ALABAMA.—*Bonds Sold.*—Freeman & Co. have sold at par and interest $1,750,000 first mortgage and refunding 6 per cent bonds of this company, the lease of which to the Seaboard Air Line was recently authorized by the Interstate Commerce Commission.

Average Price of Stocks and of Bonds

	Jan. 10	Last week	Last year
Average price of 20 representative railway stocks..	119.28	121.01	102.99
Average price of 20 representative railway bonds..	97.53	97.46	92.88

Valuation Reports

The Interstate Commerce Commission has issued final valuation reports finding the final value for rate-making purposes of the property owned and used for common-carrier purposes as of the respective valuation dates as follows:

St. Joseph Belt	$289,039	1917
Lake Terminal	2,016,458	1919
Dardanelle & Russellville	74,100	1919
St. Louis, Kennett & Southeastern	235,829	1918
Wharton & Northern	632,000	1919
Lake Erie, Franklin & Clarion	671,500	1917
Erie & Michigan Railway & Navigation Company	52,781	1917
Chicago, Milwaukee & Gary..	2,789,475	1915
Williamson & Pond Creek....	1,292,044	1916

Dividends Declared

Atchison, Topeka & Santa Fe.—Common, $1.75, quarterly; extra, $.75, both payable March 1 to holders of record January 27.

Central of Georgia.—3 per cent, payable December 31, 1927, to holders of record December 31.

Connecticut & Passumpsic River.—Preferred, 3 per cent, payable February 1 to holders of record January 1.

Delaware, Lackawanna & Western.—$1.50, quarterly; extra, $1.00, both payable January 20 to holders of record January 7.

Georgia Railroad & Banking Co.—2½ per cent, quarterly, payable January 15 to holders of record January 2.

Houston & Texas Central.—5 per cent, payable December 15, 1927, to holders of record December 15.

Massawippo Valley.—3 per cent, payable February 1 to holders of record January 1.

Nashville, Chattanooga & St. Louis.—3½ per cent, semi-annually, payable February 1 to holders of record January 21.

Norfolk & Western.—Adjustment preferred, $1.00, quarterly, payable February 18 to holders of record January 31.

Pittsburgh, Cincinnati, Chicago & St. Louis.—2½ per cent, payable January 20 to holders of record January 10.

Pittsburgh & West Virginia.—Common, $1.50, quarterly, payable January 31 to holders of record January 16.

Richmond, Fredericksburg & Potomac.—Common and dividend obligations, 3½ per cent; common, non-voting, 3 per cent, both payable December 31, 1927.

Virginian.—Preferred, 3 per cent, semi-annually, payable February 1 to holders of record January 14.

Railway Officers

Executive

Charles E. Johnston, president of the Kansas City Southern, with headquarters at Kansas City, Mo., has also been elected president of the Texarkana and Ft. Smith, succeeding **J. A. Edson,** who has been retired from the presidency of that company.

A. V. Brown, vice-president of the Camas Prairie and also general manager of the Northern Pacific, with headquarters at Seattle, Wash., has been elected president of the Camas Prairie, succeeding **J. P. O'Brien,** who is serving in the capacity of general manager of the Oregon-Washington Railroad & Navigation Company, with headquarters at Portland, Ore.

T. A. Hamilton, formerly president of the International-Great Northern and recently engaged in consulting work on a number of western railroads for banking interests, has been elected executive vice-president of the Waco, Beaumont, Trinity & Sabine, with headquarters at Houston, Tex. Mr. Hamilton will have charge of construction, operation and traffic. **P. T. Hubbell,** vice-president, has been appointed assistant to the executive vice-president, with headquarters at Houston. **J. M. Danner,** vice-president, general manager and purchasing agent, with headquarters at Trinity, Tex., will remain in direct charge of operations with the title of vice-president and general manager.

George L. R. French, assistant vice-president and general manager of the Rutland, with headquarters at Rutland, Vt., has been appointed vice-president and general manager with the same headquarters, succeeding **George T. Jarvis,** deceased. Mr. French was born on May 18, 1863, at Salisbury, Mass. He was graduated from the Massachusetts Institute of Technology in 1884, and entered railway service in September of the same year with the Chicago, Burlington & Quincy, at Lincoln, Neb. He held various positions in the engineering and operating departments of that railroad until 1890, and was then appointed roadmaster of the southern and eastern divisions of the Boston & Maine. He served subsequently as assistant superintendent of the Connecticut river division and superintendent of the Boston terminal division of the same road. On May 1, 1912, Mr. French was appointed general superintendent of the Rutland, with headquarters at Rutland, Vt., and in January, 1923, was appointed acting general manager of the same road. In November of the following year he became general manager. Mr. French was appointed to the position of assistant vice-president and general manager of the Rutland in October, 1926, which position he was holding at the time of his recent appointment as vice-president and general manager.

Samuel Porcher, assistant vice-president of the Pennsylvania in charge of purchases, stores and insurance, with headquarters at Philadelphia, Pa., who has retired, was born on December 21, 1857, in South Carolina, and was graduated from the University of Virginia in 1881. He entered the Altoona machine shops of the Pennsylvania as an apprentice on January 27, 1882, and took the full shop course, including the test department. In 1888 he was transferred from Altoona to the office of the superintendent of motive power in Jersey City, and later in the same year was appointed assistant engineer, motive power department, United Railroads of New Jersey division of the Pennsylvania. He remained in that position until 1894, and was then appointed assistant purchasing agent of the Pennsylvania. On July 21, 1913, Mr. Porcher became purchasing agent, and in January, 1918, when the President took over the operation of the railroads, Mr. Porcher was called to Washington to assist in organizing a purchasing department. On March 7 of the same year he was appointed a member of the Central Advisory Purchasing Committee, United States Railroad Administration, and on March 15, 1919, assistant director, division of purchases, United States Railroad Administration. On March 1, 1920, when the railroads were returned to their owners, Mr. Porcher was appointed general purchasing agent of the Pennsylvania system. During the coal strike of 1922, Mr. Porcher was again called to Washington in July, and served in charge of railroad fuel on the President's Fuel Distribution Committee. On January 1, 1927, Mr. Porcher was appointed assistant vice-president in charge of purchases, stores and insurance, which po-

Samuel Porcher

sition he was holding at the time he retired.

W. E. Coman, who has been promoted to assistant to the president of the Northern Pacific, with headquarters at Seattle, Wash., representing the executive department of that railroad on the Pacific coast, was born in Wisconsin in 1872. He entered railway service at the age of 16 years as a clerk on the Chicago, Burlington & Quincy at Kansas City, Mo., shortly after that time becoming connected with the traffic department of the Union Pacific at Portland, Ore. Mr. Coman was appointed assistant general freight agent of the Oregon-Washington Railroad & Navigation Company at Portland in 1901 and until January 1 1913, he served for various periods of time as assistant general freight agent of the O.-W. R. R. & N. Co., and the Southern Pacific lines in Oregon, as general freight and passenger agent of the Southern Pacific, as general freight agent of the O.-W. R. R. & N. Co., and as general freight and passenger agent of the Oregon Electric, the Oregon Trunk, the Spokane, Portland & Seattle and the United Railways at Portland. He then left railway service to become vice-

W. E. Coman

president and general manager of the Northwestern Electric Company at Portland and in March, 1919, he was elected vice-president and general manager of the Washington Water Power Company at Spokane, Wash. In 1921 Mr. Coman was appointed western traffic manager of the Northern Pacific, with headquarters at Seattle, a position he held continuously until his promotion to assistant to the president on January 1.

T. **Frank Joyce**, who has been appointed assistant vice-president of the Boston & Maine, in charge of public relations, industrial and agricultural development, publicity, advertising and employees magazine, with headquarters at Boston, Mass., was born on July 24, 1890, at Boston, Mass., and was educated in the common schools supplemented by university extension and other special studies. He entered railway service on January 1, 1925, as assistant to president of the Boston & Maine. Prior to this time he was engaged in newspaper work with the Associated Press for 17 years (latterly as news editor for New England). In April, 1923, he resigned to join the Yellow Cab Manufacturing Company at Chicago. After a year as chief of their operating engineers department, and eastern division sales manager, he returned to New England, and in Jan-

T. F. Joyce

uary, 1925, became assistant to the president of the Boston & Maine. Mr. Joyce was appointed publicity manager on July 1, 1925, which position he was holding at the time of his recent appointment as assistant vice-president.

Financial, Legal and Accounting

W. F. Lilleston, attorney of Wichita, Kan., has been appointed general attorney for Kansas of the St. Louis-San Francisco, succeeding **R. R. Vermillion** who retired on January 1.

C. A. Andrews, auditor of the Lehigh & New England, with headquarters at Bethlehem, Pa., has been appointed general auditor, with the same headquarters, and the position of auditor has been abolished.

C. G. Holm has been appointed assistant general auditor of the Elgin, Joliet & Eastern, with headquarters at Chicago, succeeding **G. W. Williams,** who has been granted a leave of absence because of ill health.

Thomas J. Cole, assistant general attorney for Missouri on the Missouri Pacific, has been promoted to general attorney for Missouri, with headquarters at St. Louis, Mo., succeeding **Judge J. F. Green,** who retired under the pension rules of the company on January 1. **T. S. Reed,** assistant real estate and tax agent, has been promoted to real estate and tax agent, with headquarters at St. Louis, succeeding **J. M. Seibert,** who has retired under the pension rules of the company.

W. J. Wright, assistant general auditor of the Missouri Pacific, with headquarters at St. Louis, Mo., has been elected local treasurer, with headquarters at the same point, succeeding **F. M. Hickman,** who retired under the pension rules on January 1. The titles of **H. C. Hale,** valuation accountant, and **C. B. Milson,** assistant to the vice-president, both with headquarters at St. Louis, have been changed to assistant auditor and their former positions have been abolished.

Robert V. Fletcher, who has been elected general counsel of the Illinois Central, with headquarters at Chicago, was born on September 27, 1869, in Grant county, Ky. He graduated from Spencer Institute, Taylorsville, Ky., in 1886 and later attended the University of Mississippi. On May 1, 1899, Mr. Fletcher was admitted to the bar at Pontotoc, Miss., and began the practice of law as a member of the firm of Mitchell & Fletcher, at Pontotoc. From 1906 to 1909 Mr. Fletcher served successively as assistant attorney general of Mississippi, as attorney general and as a judge of the supreme court of Mississippi. He was appointed special

R. V. Fletcher

counsel for the Mobile, Jackson & Kansas City (now the Gulf, Mobile & Northern) on May 10, 1909, entering the service of the Illinois Central on February 10, 1911, as general attorney with headquarters at Chicago. For a portion of the period of federal control of the railroads, Mr. Fletcher acted as assistant general counsel for the United States Railroad Administration at Washington, D. C., and on March 1, 1920, he returned to the Illinois Central as general solicitor, with headquarters at Chicago. He occupied that position continuously until his promotion to general counsel on January 1.

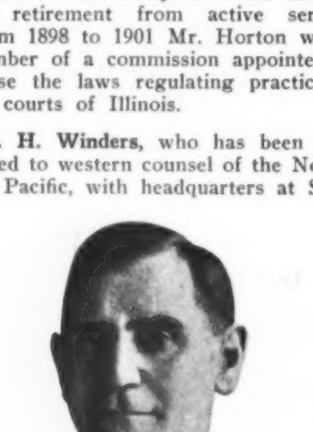
Walter S. Horton, who retired on December 31 as general counsel of the Illinois Central, with headquarters at Chicago, was born near Delavan, Ill., on December 3, 1857, and received his preparatory education at the Lincoln, (Ill.) College and Preparatory School

and at Northwestern University. He graduated from the College of New Jersey (now Princeton University) in 1880 and completed his legal education at the University of Michigan in 1882. In the same year Mr. Horton was admitted to the bar in Illinois and became a member of the law firm of Stevens, Lee & Horton at Peoria, Ill. During the 20 years from 1889 to 1909 he was

Walter S. Horton

a member of the firm of Stevens & Horton in the same city and he was then appointed general attorney of the Illinois Central, with headquarters at Chicago. In 1918 he was promoted to general solicitor, being advanced to general counsel of the Illinois Central in 1920. Mr. Horton held the latter position continuously until the time of his retirement from active service. From 1898 to 1901 Mr. Horton was a member of a commission appointed to revise the laws regulating practice in the courts of Illinois.

C. H. Winders, who has been promoted to western counsel of the Northern Pacific, with headquarters at Seat-



C. H. Winders

tle, Wash., entered the service of that railway in August, 1905, as an assistant attorney at Seattle. Five years later he was promoted to attorney, with headquarters at the same point. Mr. Winders served for the next 12 years as attorney at Seattle and in April, 1922, he was further advanced to assistant western counsel, with headquarters at Seattle. He held this position continuously until his promotion to western counsel on January 1, succeeding the late **George T. Reid.**

On January 9 the St. Louis-San Francisco effected a general reorganization of its claim department with the removal of the offices from St. Louis, Mo., to Springfield. District offices now located at Memphis, Tenn., Cape Girardeau, Mo., and Monett, and Ft. Smith, Ark., will be abolished. **H. W. Hudgen,** chief claim agent, with headquarters at St. Louis, has been promoted to general claim agent, with headquarters at Springfield. **F. B. Holland,** assistant chief claim agent, has been promoted to assistant general claim agent at Springfield, **E. H. Carr** and **W. D. Steele,** district claim agents at Memphis and Monett respectively, have been promoted to assistant general claim agents at Springfield.

Operating

E. C. Garrabrant has been appointed superintendent of mail traffic of the Atlantic Coast Line, with headquarters at Wilmington, N. C., succeeding **John De Witt** deceased.

F. R. Gerard has been appointed superintendent of the Long Island, with headquarters at Jamaica, N. Y., succeeding **E. B. Kessler,** transferred.

The title of **Walter H. Towne,** assistant general superintendent of the Boston & Maine, with headquarters at Boston, Mass., has been changed to superintendent of transportation.

E. J. Walker, assistant superintendent of the Smith's Falls division of the Canadian Pacific, with headquarters at Smith's Falls, Ont., has been transferred in the same capacity to the Farnham division, with headquarters at Farnham, Que., succeeding **F. A. Winterson.** Mr. Winterson succeeds Mr. Walker as assistant superintendent at Smith's Falls.

C. H. Wright, office assistant to the general superintendent of transportation of the Kansas City Southern, with headquarters at Kansas City, Mo., has been promoted to superintendent of the Southern division of that company and the Texarkana & Ft. Smith, with headquarters at Texarkana, Tex., succeeding **W. N. Deramus** who was elected vice-president and general manager of the K. C. S. on January 1.

H. W. Wistner, assistant superintendent of the Salt Lake division of the Southern Pacific with headquarters at Sparks, Nev., has been transferred to Ogden, Utah. **T. J. Foley,** assistant superintendent of the Shasta division, with headquarters at Dunsmuir, Cal., has been transferred to Sparks to succeed Mr. Wistner. **J. J. Sullivan,** trainmaster on the Shasta division, with headquarters at Redding, Cal., has been promoted to assistant superintendent of the Shasta division replacing Mr. Foley and Mr. Sullivan will in turn be succeeded by **B. S. Baumann,** trainmaster on the Los Angeles division, with headquarters at Indio. Cal. **B. W. Mitchell** has been appointed trainmaster on the Los Angeles division at Indio, succeeding Mr. Baumann. **W. S. Ford** has been appointed trainmaster on the Rio Grande division, with headquarters at Douglas, Ariz., and the position held by Mr. Ford, that of terminal trainmaster at El Paso, Tex., has been abolished.

R. N. Heisey, general yard master of the Chicago, Burlington & Quincy at Kansas City, Mo., has been promoted to train master of the Kansas City terminal.

W. T. Niles, passenger and freight agent on the Chicago & North Western at Casper, Wyo., has been appointed trainmaster on the Wyoming division with headquarters at the same point.

John R. Turner, general yardmaster on the Louisville & Nashville at Atlanta, Ga., has been promoted to superintendent of terminals at that point. **W. N. Hicks,** joint agent at Atlanta, has been promoted to general agent of the Atlanta joint terminals.

George M. Zimmer, assistant district superintendent of the Pullman Company at St. Louis, Mo., has been promoted to district superintendent, with headquarters at Cincinnati, Ohio, effective January 15.

J. D. Moore, assistant superintendent of the Memphis division of the Missouri Pacific, with headquarters at Helena, Ark., retired from active service under the pension rules of the company on January 1.

C. E. Stewart has been appointed general agent of the operating department of the Oregon-Washington Railroad and Navigation Company at Illwaco, Wash., succeeding **E. R. Budd,** who has retired from active service.

D. E. Rossiter, superintendent of the Coast division of the Chicago, Milwaukee & St. Paul, with headquarters at Tacoma, Wash., has been promoted to general superintendent of the Western lines, with headquarters at Butte, Mont.

H. L. Margetta, superintendent of the Canada division of the Michigan Central, with headquarters at St. Thomas, Ont., has been transferred in the same capacity to the West division, with headquarters at Chicago., succeeding **P. E. Pfeifer,** who has resigned to accept service with another railroad, and will be succeeded by **E. E. Wright,** now assistant superintendent of the Middle division, with headquarters at Jackson Junction, Mich. He in turn will be suc-

ceeded by **Frank McElroy,** now assistant superintendent at Niles, Mich.

Traffic

A. Ledingham has been appointed assistant general freight agent of the Western lines of the Canadian Pacific, with headquarters at Winnipeg, Man.

J. C. Goss, assistant general freight agent of the Buffalo, Rochester & Pittsburgh, with headquarters at Pittsburgh, Pa., has been appointed assistant general traffic manager of the Pittsburgh & West Virginia and the West Side Belt, with headquarters at the same point.

J. J. Kavanaugh, general agent in the freight and passenger department of the Missouri Pacific at Salt Lake City, Utah, has been transferred to Chicago as general agent in the freight department, succeeding **W. C. Staley,** who has retired from active service.

Robert R. Williams has been appointed assistant general freight agent of the Buffalo, Rochester & Pittsburgh, with headquarters at Pittsburgh, Pa., succeeding **J. C. Gross,** resigned. **Raymond W. Anderson** has been appointed assistant general freight agent, with headquarters at Rochester, N. Y.

H. B. Rogers, chief agricultural agent of the Erie, with headquarters at Jamestown, N. Y., has been appointed general live stock agent, with headquarters at East Buffalo, N. Y., in general charge of live stock traffic on the Erie. **W. F. Walters** has been appointed live stock agent, with headquarters at East Buffalo, in charge of live stock traffic in the Buffalo district.

S. E. Sutherland has been appointed general agent of the Norfolk & Western, with headquarters at Petersburg, Va., succeeding **Sterling Ruffin,** retired. Mr. Sutherland will report to the superintendent at Crewe, Va., on matters pertaining to transportation and to the general freight agent and general passenger agent respectively, at Roanoke, Va., on matters pertaining to traffic.

J. N. McBride, general agricultural agent of the Seaboard Air Line, with headquarters at Savannah, Ga., has been appointed general agricultural and land settlement agent, and the office of general agricultural agent has been abolished. **Clement S. Ucker,** director of development, with headquarters at Savannah, has resigned and that position has also been abolished.

H. W. Stanley, Jr., district passenger agent of the Tennessee Central, with headquarters at Nashville, Tenn., has been promoted to general passenger agent, with headquarters at the same point, a newly created position. **John T. Lewis,** terminal agent at Nashville, has been promoted to assistant general freight agent, with headquarters at the same point.

G. B. Wood, assistant to the president of the Kansas City Southern, with headquarters at Kansas City, Mo., has been appointed general freight agent in charge of solicitation, with headquarters at the same point. **H. A. Wood,** general freight agent, with headquarters at Kansas City, will have charge of rates and divisions and relations with foreign lines.

Jack T. Paris, commercial agent for the Chicago & Eastern Illinois at Shreveport, La., has been promoted to general agent at Tulsa, Okla., succeeding **R. E. Dirhold** who has resigned to accept service with another company. **Frank E. Rush,** commercial agent at Chicago, has been promoted to general agent at Kansas City, Mo., succeeding **John G. Meehan,** who has been transferred to Jacksonville, Fla.

H. I. Scofield, general passenger agent of the Denver & Rio Grande Western, with headquarters at Denver, Colo., has been given jurisdiction over the passenger traffic department following the retirement of **F. A. Wadleigh** who occupied the position of passenger traffic manager. **W. W. Hatton** has been appointed assistant general passenger agent, with headquarters at Denver. The position of assistant to the passenger traffic manager, with headquarters at Denver, has been abolished following the assignment of **W. H. Cundey** to other duties.

C. W. Johnston, passenger traffic manager of the Canadian National, with headquarters at Montreal, Que., has been appointed assistant general passenger traffic manager, with the same headquarters. Mr. Johnston was born on July 27, 1879, at Actonvale, Que., and was educated at St. Francis College, Richmond, Que. He entered railway service in 1895 as a clerk and telegraph operator for the Grand Trunk (now a part of the Canadian National) at that place, serving in that capacity until 1899. He then served as freight clerk at Ber-

C. W. Johnston

lin, N. H., and as telegraph operator and agent in the Portland district and at Sherbrooke, Que. Mr. Johnston then became clerk in the audit department at Montreal and then ticket agent clerk and in 1902 was appointed traveling agent. In 1906 and 1907 he served as an excursion clerk and during the latter year was again appointed traveling passenger agent. He became chief clerk to the general passenger agent at Winnipeg, Man., in 1909, and then served in a similar capacity in the offices of the assistant passenger traffic manager and the passenger traffic manager. In 1914 Mr. Johnson was appointed assistant to the passenger traffic manager at Montreal and in 1915 was advanced to assistant general passenger agent. In February 1923, he was appointed passenger traffic manager, which position he was holding at the time of his recent appointment as assistant general passenger traffic manager.

Roy Pope, assistant general freight agent of the Atlanta, Birmingham & Coast, with headquarters at Atlanta, Ga., has been appointed general freight agent, with the same headquarters. Mr. Pope was born on March 18, 1888, at Hooker, Ga. He entered railway service in 1906 as a stenographer in the office of the general yardmaster of the Nashville, Chattanooga & St. Louis, at Chattanooga, Tenn. In the latter part of the same year he accepted a position as stenographer in the office of the master mechanic of the Queen & Crescent Route (now part of the Southern) at Chattanooga. In November, 1907,

Roy Pope

he became secretary to the general freight agent of the Cincinnati, New Orleans & Texas Pacific, (which was then a part of the Queen & Crescent Route and is now a part of the Southern also) at Cincinnati, O., later entering the rate department. In May, 1916, Mr. Pope entered the service of the Atlanta, Birmingham & Atlantic (which is now the Atlanta, Birmingham & Coast) as executive rate clerk in the general freight office of that road at Atlanta, Ga., and was subsequently advanced to the positions of chief rate clerk and chief clerk, and in June, 1920, was appointed assistant general freight agent, which position he was holding at the time of his recent appointment as general freight agent.

Mechanical

H. Smith has been appointed master mechanic of the London division of

the Canadian Pacific, with headquarters at London, Ont., succeeding **E. G. Bowie**, promoted.

Don Nott has been appointed assistant master mechanic of the Galesburg division of the Chicago, Burlington & Quincy, with headquarters at Galesburg, Ill.

W. C. Stenason, general air brake inspector of the Canadian Pacific, with headquarters at Winnipeg, Man., has been promoted to master car builder of the Western lines, with headquarters at the same point, succeeding **T. G. Armstrong**, who retired from active service on January 1.

B. H. McKarrel, car foreman of the Chicago Great Western at Chicago, has been promoted to superintendent of the car department with headquarters at Oelwein, Iowa, succeeding **M. F. Covert** who resigned January 1 to become superintendent of the car department of the Quaker City Refrigerator line, the Quaker City Tank line and the Quaker Petroleum Company, with headquarters at Chicago.

George Thibaut, shop superintendent of the Erie, with headquarters at Meadville, Pa., has been appointed assistant mechanical superintendent, New York District, with headquarters at Jersey City, N. J. **T. F. Gorman**, master mechanic of the Meadville division, with headquarters at Meadville, has been appointed shop superintendent, with the same headquarters, succeeding Mr. Thibaut. **W. E. Harmison**, master mechanic of the Delaware and Wyoming divisions and the Wilkes-Barre & Eastern Railroad, with headquarters at Port Jervis, N. Y., has been transferred in the same capacity to succeed Mr. Gorman, and will be succeeded by **J. H. Winfield**, now general inspector of the Eastern district, with headquarters at Hornell, N. Y.

Engineering, Maintenance of Way and Signaling

F. R. Stevens, principal assistant engineer of the Rutland, with headquarters at Rutland, Vt., has been appointed office and valuation engineer, with the same headquarters.

Charles E. Beveridge, a member of the engineering department of the Union Pacific at Green River, Wyo., has been appointed engineer of maintenance of way of the Utah Railway with headquarters at Price, Utah.

P. G. Burns, formerly chief engineer of the Trinity & Brazos Valley, has been appointed chief engineer in charge of construction and maintenance of the Waco, Beaumont, Trinity & Sabine, with headquarters at Houston, Tex. **Horace Beyett** has been appointed assistant to the chief engineer, with headquarters at Trinity, Tex.

John Feild, assistant engineer of the Norfolk & Western, with headquarters at Roanoke, Va., retired on December 1. Mr. Feild was born at Petersburg, Va., on November 15, 1857, and entered the service of the Norfolk & Western as chainman, engineering department, Radford division, on August 1, 1881. He was transferred to the Scioto division as locating engineer on January 1, 1882, and was connected with the Carroll county survey as resident engineer from October 1, 1896, until January 1, 1897, when he was again transferred to the Radford division in the same capacity. He was appointed engineer in charge, Pocahontas division, in 1900, and on April 1, 1905, became division engineer of the Norfolk division. He was appointed engineer in charge, Norfolk division, in 1908, and in June, 1913, was appointed valuation engineer at Roanoke. Mr. Feild became assistant engineer on September 1, 1918, which position he was holding at the time he retired.

Moses Burpee, who, at his own request has retired as chief engineer of the Bangor & Aroostook, with headquarters at Houlton, Me., and has been appointed consulting engineer with the same headquarters, was born in 1847, at Sheffield, N. B. He entered railway

Moses Burpee

service in 1869 as a rodman on the European & North American (now the Atlantic division of the Canadian Pacific) and served subsequently as junior assistant and station agent of the same road until 1871. He was then engaged on the location of the Prince Edward Island Railway (now part of the Canadian National) and the New Brunswick (now part of the Canadian Pacific) until December, 1877. In April, 1879, Mr. Burpee entered the service of the Chicago, Milwaukee & St. Paul as a draftsman, and then served until 1883 as assistant engineer and engineer in charge of surveys on the same road. During the summer of 1883 he was with the Canadian Pacific on the construction of the Western division, and during 1884 was engineer in charge of surveys on the Central of New Brunswick (now part of the New Brunswick Coal & Railway Company) and the Short Line Railway in Maine. From 1885 until 1891 Mr. Burpee was chief engineer in charge of maintenance of the New Brunswick Railway and the Atlantic division of the Canadian Pacific, and since 1891 has been chief engineer of the Bangor & Aroostook.

John T. Ridgely, division engineer of the Richmond division of the Pennsylvania, with headquarters at Richmond, Ind., has been appointed engineer maintenance of way of the Long Island, with headquarters at Jamaica, N. Y., succeeding **G. P. Williams**, transferred. Mr. Ridgely was born on June 9, 1887, at Tyrone, Pa. He was educated in the public schools of Baltimore, Md., and was graduated from Lehigh University in 1909. He entered railway service on August 1, 1909, with the Pennsylvania as a rodman on the Trenton & New York division remaining in this position until 1913. He then served as transitman at the Broad street station, Philadelphia, Pa., until 1914, and was then appointed assistant supervisor of the Conemaugh division, with headquarters at Blairsville, Pa. This position he held until 1917, and was then transferred in the same capacity to the Maryland division, with headquarters at Chester, Pa., also serving in the same capacity at Perryville. From 1919 until 1926 Mr. Ridgely served as supervisor of the Allegheny division at Oil City, Pa., and from 1926 until 1927 served in a similar capacity on the Eastern division at Conway, Pa. He was appointed division engineer of the Richmond division, with headquarters at Richmond, Ind., in 1927, which position he was holding at the time of his recent appointment as engineer maintenance of way of the Long Island.

William Atlee James, assistant chief engineer on the lines of the Canadian Pacific, with headquarters at Winnipeg, Man., retired from active service on December 31 after 44 years of railroad service more than 29 of which have been spent with the C. P. R. Mr. James was born on June 4, 1864, at Ebensburg, Pa., and entered railway service in September, 1883, as a flagman on the Burlington & Missouri River in Nebraska (now part of the Chicago, Burlington & Quincy). With the exception of four months in 1891 as a transitman on the Great Northern and four months in 1894 as a transitman and resident engineer on the Butte, Anaconda & Pacific, Mr. James served until 1897 on the B. & M. R. in various capacities from flagman to division engineer. In June, 1898, he was appointed assistant engineer on the Canadian Pacific and later he was advanced to locating engineer. He was promoted to division engineer of construction at Winnipeg in 1909 and in 1912 he became engineer of construction on the western lines, with headquarters at the same point. Mr. James was promoted to assistant chief engineer of the Western lines in 1918, a position he held continuously until the time of his retirement. During his period of service

with the C. P. R., Mr. James has been connected with the construction of the Connaught tunnel through the Selkirk mountains, and with the construction of second main track in Saskatchewan and between Winnipeg and Ft. William, Ont.

Einar Weidemann, assistant engineer of bridges of the Pennsylvania, with headquarters at Chicago, has been promoted to engineer of bridges and buildings, with headquarters at the same point. Mr. Weidemann, who was born at Trondhjem, Norway, on May 29, 1877, graduated from the Technical Institute in that city with the degree of civil engineer in 1897. He spent several years with the Norwegian government on railroad construction, coming to the United States in 1903 when he became a structural draftsman for the American Bridge Company at Pittsburgh, Pa. In the following year Mr. Weidemann became an assistant to Herman Laub (deceased), consulting engineer and bridge specialist of Pittsburgh, and on May 5, 1909, he was appointed an engineer of structural design on the Pennsylvania at the same point. On May 1, 1915, he was transferred to the Union Station Company, Chicago, as a structural engineer, being promoted to engineer of buildings and structures on that project on January 1, 1923. Mr. Weidemann returned to the Pennsylvania on June 6, 1926, with the dissolution of the engineering organization built up for the construction of the Union Station, as an

Einar Weidemann

assistant engineer at Chicago. On April 1, 1927, he was promoted to assistant engineer of bridges, with headquarters at Chicago, a position he held until his promotion to engineer of bridges and buildings of the Western region at Chicago on January 1.

V. I. Nettleton, assistant right-of-way agent of the Missouri Pacific, has been promoted to right-of-way agent, with headquarters at St. Louis, Mo., succeeding **J. A. Prickett,** who retired from active service under the pension rules of the company on January 1.

A. F. Stotler, district engineer of the lines of the Northern Pacific west of Ellensburg, Wash., has been promoted to assistant chief engineer and engineer of maintenance of way of the lines west of Paradise, Mont., with headquarters at Seattle, Wash., succeeding **A. R. Cook,** who retired under the pension rules of the company on December 31. **G. I. Hayward,** district engineer of the lines between Ellensburg and Paradise, with headquarters at Spokane, Wash., has been transferred to succeed Mr. Stotler at Seattle. Mr. Hayward has been succeeded as district engineer at Spokane by **H. M. Tremaine,** assistant engineer of construction. Mr. Cook was born on December 7, 1857, at Lenox, N. Y., and attended Norwich (Conn.) Free Academy and the Episcopal Military Academy, Cheshire, Conn. His early railroad experience consisted of vacations spent as chainman, rodman and instrumentman on the Norwich & Worcester and the Providence & Worcester (now parts of the New York, New Haven & Hartford) during the summers of 1872, 1880, 1881 and 1882. In 1885, Mr. Cook was appointed assistant engineer on the Chicago, Burlington & Northern (now part of the Chicago, Burlington & Quincy). In 1887 he accepted a similar position on the Minneapolis, St. Paul & Sault Ste. Marie and for the following 21 years he served successively as assistant engineer on that road, the St. Paul, Minneapolis & Manitoba (now a part of the Great Northern), the St. Paul & Northern Pacific (now a part of the Northern Pacific), the Great Northern, the Pacific Coast and the Northern Pacific. Mr. Cook was promoted to engineer of maintenance of way of the N. P. with headquarters at Tacoma, Wash., in 1908 and three years later he was again promoted to principal assistant engineer, with headquarters at Tacoma. In February 1923, Mr. Cook was promoted to assistant chief engineer and engineer of maintenance of way of the lines west of Paradise, Mont., a position he held until his retirement.

Alan T. Danver, who has been acting supervisor of bridges and buildings of the Rutland during the flood reconstruction work, has been appointed principal assistant engineer, with headquarters at Rutland, Vt. Mr. Danver was born on June 21, 1893, at Stamford, Conn., and was graduated from Tufts College Engineering School with the degree of B. S. in 1915. He entered railway service in July, 1915, with the Boston & Maine as assistant bridge inspector. He resigned in November of that year to accept a position as draftsman with the Boston & Albany at Boston. In 1919 he was advanced to structural designer, and while holding this position had charge, during 1919 and 1920, of field work in connection with the construction of the bascule drawbridge over Chelsea Creek, East Boston, Mass. In May, 1924, Mr. Danver became assistant engineer and acted as resident engineer in Boston & Albany work in connection with the Castleton Cut-Off at Niverville, N. Y. He resigned from the Boston & Albany in June, 1925, to accept a position as engineering assistant on the Rutland. This position he held until November, 1927, when he became acting supervisor of bridges and buildings as stated above, remaining in this position until his recent appointment as principal assistant engineer.

Russell L. Huntley, who retired as chief engineer of the Union Pacific system and the St. Joseph & Grand Island, with headquarters at Omaha, Neb., on December 31, in accordance with the pension rules of the two companies, had completed at that time practically 42 years of service with those railroads. Mr. Huntley plans to

R. L. Huntley

make his future home in Los Angeles, Cal. He was born in New York and graduated from Rensselaer Polytechnic Institute, Troy, N. Y., in 1880. In the same year he entered railway service as an engineer on construction for the New York, Central & Hudson River (now part of the New York Central) and for a number of years following that time he acted as division engineer on maintenance and new construction. On July 1, 1886, Mr. Huntley entered the service of the St. Joseph & Grand Island as a location engineer on new construction in Nebraska where he remained until August 1, 1888, when he became an assistant engineer on the Union Pacific in charge of locomotive shop construction. During the period from January 1890, to June, 1899, his time was devoted to bridge construction and the location and construction of new lines. Mr. Huntley was then promoted to principal assistant engineer of the U. P., with headquarters at Omaha, serving in that capacity until February 1, 1905, when he was appointed acting chief engineer of the Union Pacific Railroad. In September of the following year his title was changed to chief engineer and in August, 1918, he was promoted to chief engineer of the U. P. system, occupying the latter position continuously until the time of his retirement. Under Mr. Huntley's supervision as chief engineer the Union Pacific has constructed about 1,100 miles of second main

main track, more than 700 miles of branch lines and 164 miles of important main line revision. Other projects of more than passing importance have included the reconstruction of the Missouri River bridges at Omaha and St. Joseph, Mo., and the Columbia River bridge at Kennewick, Wash., and the construction of the Union Station building at Omaha.

Obituary

Marvin Hughitt, chairman of the finance committee of the board of directors of the Chicago & North Western since June, 1925, and for a period of 37 years prior to that time, president and chairman of the board, died at his home at Lake Forest, Ill., on January 6, following a stroke of paralysis. Mr. Hughitt, who was 90 years of age, had completed 71 years of railroad service and had been actively connected with the affairs of the North Western until the day before his death. He was born on August 9, 1837, at Genoa, N. Y., and attended the public schools at Auburn, N. Y., where he also learned telegraphy. In 1854 Mr. Hughitt went to Chicago as a telegraph operator for the Illinois and Mississippi Telegraph Company, entering railway service in 1856 as a train dispatcher on the St. Louis, Alton & Chicago (now the Chicago & Alton). Later he was advanced successively to superintendent of telegraph and trainmaster and in 1862 he became superintendent of

Marvin Hughitt

the Southern division of the Illinois Central. Two years later Mr. Hughitt was promoted to general superintendent, leaving the Illinois Central in 1870 to become assistant general manager of the Chicago, Milwaukee & St. Paul. He was appointed general manager of the Pullman Palace Car Company (now the Pullman Company) in 1871 and in the following year he formed his first connection with the North Western as its general superintendent at Chicago. Mr. Hughitt was promoted to general manager of the North Western in 1876 and in 1880 he was elected vice-president and general manager, being elected to the presidency in 1887. Five years previous to 1887 he had been elected to the presidency of a subsidiary of the North Western, the Chicago, St. Paul, Minneapolis & Omaha. Mr. Hughitt served as president of the Omaha until 1907, when he was elected chairman of its board of directors, and as president of the North Western until October, 1910, when he was elected president of that railroad's board of directors. Mr. Hughitt relinquished the chairmanship of the board of the two railroads in June, 1925, when he became chairman of the finance committee.

Frank P. Patenall, signal engineer of the Baltimore & Ohio, at the head of that department since 1891, died of pneumonia at his home in Baltimore, Md., on January 11, at the age of 63.

Josiah F. Cleveland, who retired as land commissioner of the Chicago & North Western, in 1925, died at his home in Evanston, Ill., on January 5. Mr. Cleveland who was born in Masonville, N. Y., on June 19, 1847, entered the service of the North Western in April, 1880. He then served in a number of minor positions in the land and right of way department of that railroad and on July 1, 1897, he was promoted to land commissioner, with headquarters at Chicago, a position held continuously until his retirement in 1925.

George W. Snyder, 2nd, assistant chief engineer in charge of maintenance of the Pennsylvania, with headquarters at Philadelphia, Pa., died at his home in Overbrook, Philadelphia, on January 1 from pneumonia. Mr. Snyder was born on January 9, 1866, at Pottsville, Pa., and was educated at Lehigh University. He entered railway service on November 1, 1884, as a rodman on the Renovo division of the Pennsylvania. From January 1, 1886, until August 1, 1890, he was assistant supervisor of that division, becoming supervisor at that latter time, and remaining in that position until June 10, 1897. He then became supervisor of the Baltimore division, and on July 1, 1900, was transferred in the same capacity to the Altoona yard. From January 1, 1901, until June 1, 1903, Mr. Snyder was division engineer of the Monongahela division, and from the latter date until April 1, 1907, served in the same capacity on the Pittsburgh division. He was then appointed principal assistant engineer of the western Pennsylvania division at Pittsburgh, Pa., which position he held until October 25, 1917, when he became assistant engineer maintenance of way, Eastern lines of the Pennsylvania. On March 1, 1919, Mr. Snyder was appointed general store keeper of the Eastern region, and in February, 1924, was appointed assistant to the store's manager. In January, 1926, he was appointed assistant chief engineer in charge of maintenance which position he was holding at the time of his death.

Edwin O. Faulkner, vice-president of the Santa Fe Land Improvement Company and the officer in charge of California oil properties of the Atchison, Topeka & Sante Fe, with headquarters at Los Angeles, Cal., and during his earlier railroad career a pioneer in the application of preservative processes to railway timber, who died on December 17, was born in Forfar, Scotland, on March 3, 1850. Mr. Faulkner went to Canada at the age of 21 years, and a few years later to the United States. He entered the service of the Santa Fe in 1889 as an assistant in the office of the president at Chicago and in November, 1893, he was transferred to the office of the general auditor at the same point. In September, 1894, he was appointed manager of the St. Louis, Kansas City & Colorado (then a part of the Santa Fe and now of the Rock Island), with headquarters at St. Louis, Mo., where he remained until June of the following year when he engaged in special and contract work for the Santa Fe receivers at Chicago. Mr. Faulkner was appointed manager of the Pecos (now a part of the Santa Fe) at Eddy, N. M., in June, 1896, and was ap-

Edwin O. Faulkner

pointed assistant to the general manager, with headquarters at Topeka, Kan., in November, 1897. In April, 1904, he was promoted to manager of the tie and timber department, with headquarters at Topeka, serving at that point and at Los Angeles until 1918. Soon after his appointment as manager of the tie and timber department Mr. Faulkner began investigation of European timber treating practices which resulted in the introduction into this country of the Rueping process of treating ties. In 1918 Mr. Faulkner was elected vice-president of the Santa Fe subsidiary companies on the West coast including the Santa Fe Land Improvement Company, the Chanslor Canfield Midway Oil Company and the West Port Tie Company, with headquarters at Los Angeles, a position he held until the time of his death. Mr. Faulkner had been confined to the Santa Fe hospital at Los Angeles since November 14 and death was attributed to pernicious anemia brought on by advanced age. During 1906 Mr. Faulkner served as first vice-president of the American Wood-Preservers' Association.